

CONSUMERS' RESEARCH BULLETIN



General Bulletin Number

April, 1938

Consumers' Research BULLETIN

Issued by

Consumers' Research, Inc., Washington, N. J.

Vol. 4 (new series) No. 8
(Vol. 7, No. 3 of the *General Bulletin* series)

Editors

F. J. SCHLINK J. B. MATTHEWS
M. C. PHILLIPS E. G. WATTS

Technical Staff

R. JOYCE E. W. CHENEY

This Issue Is Not Confidential

CONTENTS FOR APRIL, 1938

	Page
Off the Editor's Chest	1
Travel Notes, by B. Travel Wise	2-4
Razor Blades	4-5
Mowing Beards Electrically	6-8
Beware of Chiselers in Grass Seed	8-10
Bath Salts	10-12
Mayonnaise	12-15
Writing Inks	15-20
Corrections and Emendations	20
Photographic Exposure Meters	21-22
Enlarging Accessory for Use with Your Own Camera	22
Signs and Portents	23

This issue is one of 4 *Bulletins* issued during the year by Consumers' Research which are not confidential. This *Bulletin* may be freely discussed with friends. We hope that you will use the opportunity to show them what CR is doing for consumers. The *General Bulletin* is available not only to individuals, but to libraries, schools, and other groups, at \$1 for the subscription year October through June. The next non-confidential issue will be the June, 1938, number. ¶Responsibility for all specific statements of fact or opinion at any time made by Consumers' Research lies wholly with the technical director and staff of the organization. ¶Please send notice of any change of address at least two weeks before it is to take effect, accompanying your notice with statement of your previous address. Duplicate copies cannot be sent to replace those undelivered through subscriber's failure to send advance notice, except at the regular price for orders of such material as back issues. N.B.—For a detailed account of CR's early history, policies, and information as to the answering of special inquiries about commodities, subscribers are urged to read the *Introduction to Consumers' Research* which is sent to anyone without charge.

Symbols used to indicate sources of data and bases of ratings:

A—recommended on basis of quality.

AA—regarded as worthy of highest recommendation.

B—intermediate with respect to quality.

C—not recommended on basis of quality.

cr—information from Consumers' Research's own tests or investigations.

1, 2, 3—relative prices, 1 being low, 3 high.

37,38—year in which test was made or information obtained by the staff of Consumers' Research.

Off the Editor's Chest

THE administration says prices are too high. Next week it says they are too low. Again, it says some prices are too high and others are too low. The druggists protest that they can't make a living because of competition from the cut-rate stores, i.e., the druggists think prices are too low. They get their Congressmen to pass the Tydings-Miller bill which, in effect, gives them power to force manufacturers to set prices below which many necessary products cannot legally be sold.

Back in medieval times, there was developed the theory of the Just Price. Briefly, the economists, who were mostly churchmen, believed that every article had its own price at which it ought to be sold. To sell it for more or less was a sin. The price-fixers of those times, however, had an advantage over our modern brain-trusters, in dealing with a stable society in which everyone's scale of living was rigidly determined by law or custom. A workman, for example, was not permitted to wear certain kinds of garments or certain colors or stuffs reserved for the nobility.

The government's attempts to regulate prices in this country is a kind of unconscious throw-back to medieval economic ideas. There seems to be the feeling that if by some hocus-pocus the right price can be hit upon, all our economic problems will be solved. The churchmen were more logical. They took for granted that in fixing prices it was necessary to fix a scale of living for each group in society. There is a certain similarity in Soviet Russia where, for example, government officials are allowed to have Packard cars and luxurious villas in the country as part of their remuneration. Due to the government's price-fixing policies, such luxuries are wholly unobtainable by workmen and peasants.

In this country, however, the fixing of prices has never worked because the government was unable to take the corollary steps of fixing incomes. Consumers have retained the privilege of refusing to buy price-fixed commodities whenever and wherever the price was higher than they wished to pay, and this in turn has forced prices down even when efforts were made to force them upward by law.

There are scientific ways of determining cost of production of a particular commodity and even of the retailer's cost of doing business. Businessmen and government officials alike, however, prefer to operate on the basis of what the traffic will bear or can be made to bear, and to be discreetly mysterious about their method of determining a particular price. The New Deal has even threatened to prosecute those among its political enemies who published the tax content of common consumers' goods in order that the consumer might know what government was costing him and how sharply taxes were contributing to increased living costs. The present depression is an excellent exemplification of the limits to what "the traffic will bear." The consumer is now doing what he has often done before—used, reluctantly, the only weapon which government policies have left him for the expression of his opposition to New Deal policies.





TRAVEL NOTES

THE RISING VOGUE OF FREIGHTERS

OF LATE everybody seems to want to go voyaging on a freighter. Why this sudden interest? There have always been freighters that carried from one to a dozen passengers, but nobody paid much attention to them until recently, when articles began to appear in the popular magazines telling about this simple, informal, and economical way of travel. When *Reader's Digest* with its circulation of over two million readers featured one of these articles, the craze really got under way.

There are outstanding bargains here and there in freighter travel. You can, for example, go from New York to San Francisco by freighter, through the Panama Canal, with various other ports en route, at a cost of only \$3.50 per day, but—the voyage takes twenty-eight days. These particular ships sail only once a month, carry only ten passengers, and are generally sold out about two months in advance.

You can sail from Seattle to London by freighter at a cost of about \$4 a day, but it takes seventy days. If you are writing a book or evading a summons that's a good quiet way to spend your time, but you can get from Seattle to London for the same amount of money—\$270—and in much less time by going overland to New York and taking a fast steamer from there. Then, there are various other difficulties and drawbacks to freighter travel which popular articles on the subject usually gloss over or ignore.

The average freighter carries no doctor and no stewardess. Some will not carry women passengers at all—the captains being of the old-fashioned school who believe women are unlucky. If you happen to need an operation en route, the captain gets out his book and his tools, and will do the best he can, but it's not apt to be a professional job, and you may need to be reconstructed somewhat by a surgeon when you get ashore. Fortunately, such emergencies are the exception and not the rule. There are many persons to whom the slow rate of speed, low cost per day, the simple fare, the casual dress, the lack of formality, and the shipboard routine has a distinct appeal. You can go almost anywhere in the world by freighter, provided you have the time and the patience to wait for the right ship, at rates for from three to eight dollars a day. In fact, many of the world's far harbors can be reached only by freighters, ports at which regular passenger steamers do not call. But if your time is limited and you must sail and be back on a certain day, or even a certain week, then freighters are not for you.

If you are the kind of a person who likes to sit knee-deep in timetables and sailing schedules planning trips, then by all means send three dollars to the publisher of the Official Steamship Guide at 420 Lexington Avenue, New York City. This excellent guide, issued once a month, gives the name, schedule, fare, and list of ports of every ship that sails the Seven Seas, besides a wealth of other travel information. It is cross-indexed so that every ship that touches every port in the world is listed. With

this guide and a good atlas, you can plan trips that will make Magellan and Captain Cook look like Boy Scouts. It's worth the price even if you never get any farther from home than the state capital.

If you are not technically minded and would just as soon have someone else look up the answers, apply to your nearest travel agent, or, if he doesn't show an interest, drop a line to the American Express Company at 65 Broadway, New York City, where there is a department of economical travel to handle such matters.

One must learn to distinguish between "freighters" and "passenger cargo steamers." A freighter has accommodations, as a rule, for a maximum of twelve passengers, sometimes only four or five. She, the freighter, starts when she gets ready—sometimes three days later than advertised—does or does not call at all the ports on her schedule, and arrives on an unpredictable date at her destination. Don't ask me if the gender has anything to do with this disregard of time—I don't know.

Passenger cargo steamers are not freighters in the above sense; they carry upwards of 150 passengers and many of them have beautifully appointed rooms with private bath. They also carry doctor and stewardess, and keep pretty close to their schedule. In this group—to name a few—one should include the fine ships of the American Export Line to the Mediterranean, The American Scantic Line to the Baltic, the Colombia Line and the Canadian National ships to the West Indies.

A word of warning should be inserted here about sending remittances to out-of-town individuals or firms who are not personally known to you. If things do not go well, or if you change your mind, it is sometimes difficult to get your money back.

EUROPEAN TRAVEL FOR 1938

The European travel picture in 1938 will not differ greatly from 1937. Steamship fares on the Atlantic will be up about 15 percent. Hotel rates throughout Europe will probably be up 10 to 15 percent. Italian rates have already advanced (as of January 15) and rail rates may be up a little, but these slight advances are offset by the possibility of further currency declines before summer. The general information in the article "Going to Europe Third Class," in *CR's Bulletin*, April 1937, still holds. Italy will still continue to be the cheapest country for tourist travel, and England among the most expensive.

SHOULD YOU JOIN A TOUR OR TRAVEL ON YOUR OWN?

The answer as to whether or not to join a tour depends on the individual. If you feel that you should like to spend all your time enjoying Europe, letting someone else get the headaches over timetables, hotels, and reservations, then by all means join a tour and let the tour conductor do the worry-

ing. You can, of course, go alone and take these responsibilities upon yourself. It will not cost you quite so much but much of your time will be taken up in crowded travel bureaus and railroad stations. It's one of those things you must decide for yourself. (If you are traveling on your own, an excellent little guide book called *Hand-me-down* which lists, with prices, where to stay and eat in various cities throughout Europe and other parts of the world can be secured for \$2 from the Holland American Line, 29 Broadway, New York City.)

When three or four persons travel together you can take turns at these routine tasks, but if you travel with friends, there is one rule which must be scrupulously observed. All expenses must be strictly Dutch treat and all accounts should be settled every night. Failure to observe this has broken up many a happy party, and set many a person wondering how he ever happened to take up with people so casual about their money obligations.

It is hardly possible to travel rapidly and cheaply. By that I mean if you intend to spend from one to three days in each of fifteen cities your hotel and travel costs will be around \$8 a day, no matter how hard you try to save, for the reason that you simply cannot afford to waste time trying to find cheap places to sleep and eat.

A number of books have been written on how to see Europe on one dollar a day, but so far as I can find, no one except their authors have been able to do this.

If you must save, the technique is to travel slowly, spend a week in each of five cities and leave the rest of the world for some other time.

The second rule is, ask your way. You will begin, let us say, at the Strand Palace, in London—15 shillings for two persons, with breakfast (about \$1.75 each). Before leaving ask the hotel porter to recommend a place within your price range in your next city. From there ask your way to the next and so on. It's very simple once you get the hang of it.

The third rule is, always travel in pairs, or threes or fours. Three girls together have nine times as much courage in bargaining as one alone and much more fun as well.

There are in New York City forty-one bureaus maintained by foreign travel interests to distribute literature, lists of hotels, etc. The travel department of the Pan American Union in Washington, D.C., will give full information on any of the Latin American countries. Write a postal to each of the names on this list and you will not need to purchase guide books, but you may need an extra trunk. And that reminds me—smart travelers no longer carry trunks. Take two suitcases instead, and be careful that the suitcases do not, themselves, weigh so much that you will hesitate to load them up with clothing, reading matter, and supplies.

SOUTH AMERICA

As war clouds continue to gather over Europe, more travelers will turn to Mexico and South America. It is no longer expensive to travel in

Latin America, *once* you get there. In Chile, travel and living are so cheap that it has been called a second Majorca and may soon become the mecca of all those who must make a small fixed income go a long way. A round trip first-class railroad ticket good for thirty days and covering more than 2000 kilometers of travel in Chile costs less than ten dollars, while a six-course dinner in the diner on the same train—the best I ever ate—costs thirty-five cents. Everywhere in Chile you will find small hotels and pensions where one can live for one dollar a day and less by the week. A bottle of excellent native wine costs ten cents. Southern Chile, with the German Colonies and the native Indians, is especially colorful and attractive. In Orsorno one can hire a two-horse carriage with its driver for fifty cents an hour, while an ordinary saddle horse can be purchased outright for ten dollars. Clothing and shoes are equally cheap, and only imported articles are expensive. In Santiago a haircut, shave, and shampoo cost the writer 20 cents. The man or woman with a fixed income of \$60 a month can live like a prince in Chile.

One can easily spend a winter in this mild climate. The country is not very wide, but from North to South it is over 3000 miles long.

Peru, the Argentine Republic, Uruguay, and Brazil, while not as cheap as Chile, are not expensive according to our standards. In all of these countries travel costs are apt to be lower than in Europe and there is nowhere any stinting or shortage of food and good native wine.

B. TRAVEL WISE

FOREIGN TOURIST INFORMATION OFFICES

Beautiful travel posters may frequently be secured without charge or at moderate cost for your school, library, or club from some of the organizations listed. These government and railway bureaus located in New York City also have literature and information available on travel in their respective countries:

Associated British & Irish Railways, Inc., 9 Rockefeller Plaza
 Australian Government Information Office, 25 B'way
 Austrian National Tourist Office, 630 Fifth Ave.
 Belgian State Railways, 587 Fifth Ave.
 Belgian Tourist Office (C. Hallaert, Consul), 257 Fourth Ave.
 Bermuda Trade Development Board, 500 Fifth Ave.
 Brazilian Tourist Bureau, 551 Fifth Ave.
 British Guiana Information Bureau, 8-10 Bridge St.
 Chilean State Railways, 225 B'way
 Colombian State Railways, R. Dellevie, 561 Fifth Ave.
 Compagnia Italiana Turismo, 626 Fifth Ave.
 Cuban Tourist Commission, RCA Bldg., Rockefeller Plaza
 Curacao Information Office, 25 B'way
 Czechoslovakian State Railways, 587 Fifth Ave.
 Danish State Railways, 28 W. 48 St.
 Egyptian Tourist Information Office, 665 Fifth Ave.

Finnish Travel Information Bureau, 630 Fifth Ave.
 French Government Tourist Bureau, 610 Fifth Ave.
 German Railroads Information Office, 665 Fifth Ave.
 Hungarian State Tourist Department, 1270 Sixth Ave.
 Iceland Tourist Information Bureau, 630 Fifth Ave.
 India State Railways, 38 E. 57 St.
 Intourist, Inc. (Soviet Russia), 545 Fifth Ave.
 Italian Tourist Information Office, 626 Fifth Ave.
 Jamaica Tourist Trade Development Board, 230 Park Ave.
 Japan Tourist Bureau, 551 Fifth Ave.
 Mexican Railway, 76 Beaver St.
 Mexican Tourist Information Office, 630 Fifth Ave.
 Nassau (Bahamas) Information Bureau, 30 Rockefeller Plaza
 National Railways of Mexico, 205 W. 34 St.
 Netherlands India Tourist Office, 405 Lexington Ave.
 Netherlands Railways, 405 Lexington Ave.
 Newfoundland Information Bureau, 620 Fifth Ave.
 Norwegian Travel Information Office, 580 Fifth Ave.
 Nova Scotia Government Bureau of Information, 6 E. 45 St.
 Panama Tourist Commission, 551 Fifth Ave.
 Polish Travel Bureau, 38 Pearl St.
 Railways of France, 610 Fifth Ave.
 South African Government Railway, 250 Park Ave.
 Swedish Travel Information Bureau, 630 Fifth Ave.
 Swiss Federal Railroads, 475 Fifth Ave.

Tourist Bureau Dominican Republic, 17 Battery Place
 Travel & Industrial Dev. Asso. of Great Britain & Ireland, 620 Fifth Ave.
 Trinidad and Tobago Information Office, 8 Bridge St.

THE FOLLOWING FOREIGN BUREAUS ARE LOCATED IN OTHER CITIES

Associated British & Irish Railways, Inc., 412 W. 6 St., Los Angeles
 Associated British & Irish Railways, Inc., 333 N. Michigan Ave., Chicago
 Australian National Travel Assn., Hotel Clark, Los Angeles
 German Railroads Information Office, 333 N. Michigan Ave., Chicago
 German Railroads Information Office, 251 Post St., San Francisco
 Hellenic Information Bureau, National Press Bldg., Washington, D.C.
 Italian Tourist Information Office, 333 N. Michigan Ave., Chicago
 Italian Tourist Information Office, 604 Montgomery St., San Francisco
 Japan Tourist Bureau, 1151 S. B'way, Los Angeles
 Mexican Railway, 146 S. Dearborn St., Chicago
 National Railways of Mexico, 201 N. Wells Bldg., Chicago
 New Zealand Government Office, 606 S. Hill St., Los Angeles

RAZOR BLADES

"D.R.—I'd like to have a quart of blood for a transfusion; can you give it?"

"Stude—I can only give you a pint. I gotta shave tomorrow."

"Too gruesome," you start to say and then hesitate as you gingerly touch a still tender and gory spot left by one of those painful shaves that left you wishing you might have been permitted to retain the hirsute adornment after the manner of a primitive man or a member of the House of David.

This year, however, CR has better news in store for man's long suffering face; better, that is, than for several years back. The thin blades, which stepped into the limelight last year, have apparently had a useful effect in improving the standards of at least a part of the razor blade industry, and some of the brands which have, in the past, shown only promise of being passably good have stepped up into the decent shave class. And, of course, some of the brands which are noted for their ups and downs of quality have fallen again among the *Not Recommendeds*. But don't assume from this, the generalization that some blade manufacturers would like to have you make, that all thin blades are superior. Although the majority of the thin blades tested gave more or less comfortable shaves in the shaving test, some were far superior to others both as to initial sharpness and endurance. A possible disadvantage

was suggested by one user who felt that the thin blades did not lend themselves as well to sharpening as blades of ordinary thickness. Some have even been so unkind as to hint that the drive for thinner blades, as also for the long slot in the thicker blades which preceded the trend to thin blades, was but an ingenious device of the manufacturers to discourage resharpener of blades by making the action of the stropping machine or other device far less efficient than it would be with the thicker and stiffer old-style blade. CR tested *Thin-Flex* and *Windsor Super-Thin* blades rather thoroughly on this point in the laboratory, and results showed that both sharpened very well on an *Allegro* and on a *Handy Andy Velvet* sharpener. The best thin blades performed so well in the laboratory tests, and also gave so many good shaves without sharpening, that they should certainly prove a welcome improvement not only for those who do not usually use sharpeners, but for all who use safety razors.

It must be remembered that a good blade is only half the battle in obtaining a clean, painless shave; correct preparation of the whiskers is also essential. Even the best blades may be unsatisfactory, and will certainly have a short life if used on a tough beard that has not been properly softened by following the correct technique of lathering, for dry hair dulls cutting edges with greater speed than *lead, alum-*

inum, or annealed copper. In the article on "Shaving Soap," in the January 1938 Consumers' Research Bulletin, there is sound advice on preparation for shaving, as well as on what soap, cream, etc., to use. These simple but adequate directions should be carefully followed before attempting to form any opinion as to the quality of the blade used for the actual shaving. Comparison of shaving results without first making sure that the preparation of the face for the shave is identical in the two cases will have little meaning; in any attempt, therefore, to evaluate blades by actual shaving tests, the routine of preparation of the face for the shave should be carefully standardized.

Razor blade advertising should be read with a very definite "you-show-me" complex. Take for instance Gillette's "face on the ball-room floor ... never embarrassed by tell-tale traces of unsightly stubble ... his skin smooth, fresh-looking"; certainly CR's tests showed no indication that such perfection could be obtained by using Gillette blades. In fact, it would seem that the really good blades are notable in being among many fine products that do not advertise extensively. Perhaps in an industry where prices are rather closely competitive, the cost of advertising tends to be made up by shortcuts in, and methods of speeding up, production processes—for the razor blade is certainly an item where the production engineer can do almost anything he pleases with quality by being slow and careful, or fast and letting quality slide.

The results of CR's latest test of razor blades follow. These blades were purchased from several large retailers, and several blades of each brand were tested from each of at least two sources (except in cases where the blades were obtainable only through a single distributor), thus giving some indication of the degree of uniformity and control exercised by the manufacturer. All ratings are cr 38.

A. Recommended

GILLETTE-TYPE BLADES

- Dublekeen* (General Blade Corp., 39-41 W. 23 St., N.Y.C.) 3c. Again found (as in and since 1935) to be the most dependably good blade of the regular, or standard, thickness. **2**
- Thin-Flex* (General Blade Corp.) 5c (50 blades for \$2 postpaid). By a wide margin the best blade tested both as to initial sharpness and endurance. **3**
- Windsor Super-Thin* (Windsor Mfg. Co., Inc., Orange, N.J.; sold by Rogers Peet & Co., N.Y.C. and Boston) 5c. A first-class blade with not quite the initial sharpness of *Thin-Flex*. **3**

BLADES OTHER THAN GILLETTE TYPE

- Gem Micromatic Double Edge* (Gem Division, American Safety Razor Co., Brooklyn) 8 to 10c. **3**
- Sextoblade* (Edw. Weck & Co., 206 B'way, N.Y.C.) 10c. Single-edge blade for *Weck* razor. **3**
- Valet Auto-Strop* (Autostrop Division Gillette Safety Razor Co., Boston) 5c. **3**

Qualified Recommendation

The following blades were found good in the test just completed but it was deemed wise not to give them full recommendation either because CR had not tested them before and, therefore, had no clue as yet to the probable concern of the manufacturer for close manufacturing control and uniformity of product; or because past experience may have indicated that the high quality found now might or might not be maintained in the future.

GILLETTE-TYPE BLADES

- Marlin* (The Marlin Fire Arms Co., New Haven, Conn.) 1¼c. The blades tested showed improvement in quality over those of last year but CR's experience with this brand in the past has been on the whole unsatisfactory, the manufacturer has appeared not to be in a position to maintain accurate quality control. **1**
- Barbasol* (The Barbasol Co., Indianapolis) 3c. In an earlier test this blade gave fairly good performance; later, it proved mediocre. In the present test it showed both high initial sharpness and excellent durability. **2**
- Wards Super Thin*, Cat. No. 45—3523 (Distrib. Montgomery Ward & Co.) About 4c. May be the same blade as *Windsor Super-Thin* listed under A. Recommended. **2**
- Wexteel* (Edw. Weck & Co.) About 4c. Most of these blades tested were very good but occasionally a poor one was found; very satisfactory on shaving test. **2**

C. Not Recommended

GILLETTE-TYPE BLADES

- Ardell* (Sold by Cooperative Distributors), 1.8c plus postage; *Darwin Non-Rust*, 13c; *DeLuxe Sta-Sharp* (distrib. Sears, Roebuck & Co.), about 4c; *Elite* (Sears' thin blade), about 2c; *Gillette Blue*, 5c; *Kirbury* (distrib. Cooperative Merchandising Bureau, N.Y.C.), 1c; *Po-Do*, about 3c; *Probak Jr.*, 2.5c; *SR Double Edge* (Sears-Roebuck), 1c plus postage; *Segal*, 3c; *Twenty Grand*, 2c; *Wards Supreme*, about 3c plus postage.
- Berkeley*. Sold also as: *Sterncrest* (Stern Bros., N.Y.C.); *B. Altman & Co.* (B. Altman & Co., N.Y.C.); *Shartenberg's* (Shartenberg's, New Haven); *M & F* (Meier & Frank, Portland, Oregon); *Halesworth* (Hale Bros., San Francisco); *Silver Knight* (Mandel Bros., Chicago); *Harris' Own* (Harris & Co., Dallas); *Vandervoort's* (Scruggs-Vandervoort-Barney, St. Louis); *'Shadow Thin'* (Fred Harvey, Chicago); *Birdcraft* (Emery-Bird-Thayers, Kansas City, Mo.); *De Luxe* (Marshall Field & Co., Chicago). All these are thin blades; found not to be as sharp or durable as some other thin blades, despite wide department store distribution.

BLADES OTHER THAN GILLETTE TYPE

- Durham Duplex*, 7c; *Gem Single Edge*, 5¼c; *Wards Duro-Edge* for *Durham Duplex* razors, 3¼c; *Wards Duro-Edge* (single edge for Gem-type razors), about 2c; *Enders Speed*, 7c; *Ever-Ready*, 6c; *Schick Injector*, 3¼c; *Schick Magazine*, 3¼c; *Swan Single Edge* (Sears-Roebuck), about 2c.

MOWING BEARDS ELECTRICALLY

A STUDY OF ELECTRIC SHAVERS

IT IS ESTIMATED that there are well over three million electric shavers now in use. As this number shows every sign of continuing to increase rapidly, the makers of razor blades and of shaving soaps have ample cause for concern. As there is no likely means for regaining all of the business they have lost, some of the manufacturers are seeking means to enter the field themselves in order to obtain a slice of what is apparently a very profitable business. American Safety Razor Co. have announced their intention of putting an electric shaver on the market, and Gillette is said to be working along the same lines. This feverish activity on the part of manufacturers, and the huge advertising expenditures being made in order to catch the attention of a public whose attention has been somewhat dulled by past advertising on the subject of revolutionary shaving inventions, should be looked on by consumers with proper cynicism. The wise consumer will remember that while every new shaving device will be described in terms which suggest that at last the shaving millennium has been achieved, most of the new shaving devices will have defects or disadvantages of a fairly serious nature—not one of which will ever be mentioned in any of the advertising.

Those who buy an electric razor in the high expectation of being enabled to whisk away the morning whiskers with a few easy, effortless strokes are likely to be quite disappointed during and after the first shave. They may even be more or only slightly less disappointed after a few weeks of electric shaving—depending on whether the shaver of their choice is a good one (as most are not) and whether their beard and skin are suited to the results produced by this kind of shaving. For using an electric shaver is not a wholly blithe, pleasurable, or even painless procedure, giving the quick, clean, close shaves that the advertising depicts so attractively. Very few users have found that they could shave as close as with even a mediocre blade-type razor. To shave at all decently in the same number of minutes as with a blade-type razor, the user must take weeks to become quite expert, with any electric shaver of whatever type or style, irrespective of claims to the contrary made by some makers. If the shaver is not a first-rate one, the consumer may never achieve quick and easy shaving with an electric shaver; if it is a bad one, he may become increasingly disgusted with each successive use, in his unsuccessful attempts to get something approximating the sort of shave he was used to with the safety razor, which has suddenly become old-fashioned. It is in any event doubtful if even the best electric shaver can give any saving of time over blade shaving; though one can, in a minute or two with certain electric shavers, remove the most of a two- or three-day-old beard, and for some users this may be the only compensating advantage in electric shaving. But for a close, clean job suitable for an important engagement or a social event, on a beard which is only a day old, much more time and effort are required.

These conclusions have been corroborated by reports from a considerable number of users, the sum of which indicates that a fair percentage of electric razor users will find their new appliance's performance wholly disappointing. The knack of handling the shaver to get good results quickly must be acquired not only by practice, but by observation of the peculiarities of one's beard, a matter which may not be disposed of to one's full satisfaction even after several months' use. For some men, especially those with sparse or light-colored beards, the electric shaver may be good enough for the ordinary everyday shave, but for many others, who are perhaps more particular, it is quite certain that it will not pass muster, especially for an "evening dress" shave.

It must be admitted, however, that there are a large number of men who will find the electric shaver a boon, because their tender skin makes shaving with the blade-type razor somewhat of an ordeal. To these, the less perfect shave obtained by some power beard-mowers is perhaps more than balanced by their elimination of skin irritation. One should not be too optimistic about being freed from the bugbear of skin soreness, however, for some makes of shavers are characterized by a decided propensity for chafing the skin, leaving it red and smarting, a fault which is entirely or relatively absent in a few makes. This fault is, moreover, not confined to the cheaper shavers, in which it might be expected as the result of less perfect finishing of the working surfaces. As new makes of shavers have successively appeared on the market, CR's trials of them have shown that this chafing is perhaps the most common defect, more so even than the failure to shave well. Both the *Remington Rand* and the *Packard*, among the most widely advertised electric shavers, chafed some users so severely that we believe they would be thought by some, even men who are ordinarily not troubled with skin tenderness, to be unsuitable for regular use.

The electric shaver gives noticeably improved results when the face is slightly moist with perspiration, or after washing. Taking advantage of this effect, probably, is the idea of the new Pinaud preparation, *Set-Up*, optimistically advertised as revolutionizing the oh-so-recently revolutionized methods of shaving electrically. This preparation is claimed to cut shaving time in half and to leave the face very smooth and fresh. On chemical analysis, it was found to consist largely of water and alcohol, with a small amount of perfume, boric acid, and about one percent of an organic anesthetic compound similar to benzocaine. ¶It would appear that CR subscribers would be well advised to avoid preparations which in any way act to reduce irritating effects of shaving unless their composition is fully known, and unless the long-run effects on the skin of any drug that may be used in such preparations are fully investigated and understood. CR believes on the basis of present information that the small quantity of benzocaine present in the preparation under consideration gives little likelihood of injuring

the health of the skin. Like many another cosmetic preparation able to support extensive advertising, the cost of preparation of this pre-shaving lotion is trifling, and its selling price of \$1 for the small amount of a quarter-pint must net its maker, and the agencies which carry on his advertising campaign, a very handsome profit indeed for their ingenuity. The actual cost to the maker for the ingredients of one-fourth pint of *Set-Up* may be estimated at approximately 7 cents. Even this may be high because it assumes the use of a much more expensive type of alcohol than is commonly used in preparations intended for external application.

It is well to note that some makes of shavers are less well adapted for trimming long hair than others. If you are one who is fussy about the neatness and evenness of your sideburns, you will have to take care to select the proper shaver. Only a thorough trial can enable you to choose the shaver best suited to your needs. The *Sunbeam* in particular, because of its construction which uses holes instead of slots for the entry of the hairs, was not well adapted for clipping long hairs. Some makes also have more tendency to pull long hairs than others, and are more difficult, perhaps even painful, to use when the beard is long, or for women to use in shaving the armpits or legs.

At best, there is a special hazard of electrical shock that must be considered with any electrical appliance used in the bathroom with its special problems of dampness, body unprotected by clothing, and a network of well-grounded highly conductive water and sewer piping to increase the ease with which a leakage current or a stray current can find a path to earth.

Electric shavers are also notable in the extent to which they tend to cause severe radio interference. With the exception of the *Sunbeam*, the majority of the electric razors gave considerable radio interference. In an apartment house or a hotel, this may be very annoying not only to one's own family but to neighbors. It can, however, be satisfactorily eliminated in many cases by the use of electrical filters such as the *Aerovox* Radio Noise Eliminator, Type IN-31 (*Aerovox Corp.*, Brooklyn, N.Y.). Not all filters are equally effective, however, and as yet final opinion cannot be given on electric-shaver filter problems, which require an investigation of their own. Part of this problem is to estimate the filters' continued reliability against electrical breakdown and the then present extremely dangerous hazard to their user. It is to be hoped that a special study of separate filters may be rendered partly unnecessary by activity on the part of electric razor manufacturers to provide a more effective self-contained interference-eliminating accessory in the razor, or in its connecting cord, than those now used.

Several types of cutting heads are available for some makes of shavers, with slots of different widths. If one has either a very fine or a very coarse beard, it will be well to submit a sample of the stubble to the manufacturer to ascertain whether one of the finer or coarser heads should be used.

Final judgment of particular makes of electric shavers will depend upon reports of defects yet to

be received from subscribers and members of our own staff, and the conscientiousness of manufacturers in fulfilling of guaranties and dealing with complaints, a matter on which a good deal of information no doubt will be collected in the course of the next few months.

Consumers who have become accustomed to using electric razors will quite likely find it advantageous to take with them a hand-power safety razor when traveling abroad or on steamships or trains, or to the country or camp, or in any circumstances where the current available is not of the right voltage for the particular electric razors which they may have. Models are, of course, available for different voltages, as are transformers or reducers to adapt the razor to other voltages, but the purchase of a second razor or a transformer or voltage reducer may make electric shaving too expensive a luxury for the person whose home is where his hat is.

Indications are that the present prices cannot be maintained much longer, as the market, which has been chiefly amongst those of the higher income levels and those who are appealed to by any sort of new mechanical gadget or novelty, is fast becoming saturated. The appearance of secondhand markets where used electric razors can be bought for as little as \$3 or thereabouts is another indication that prices are due for a cut. Quite likely the next few years will see electric razors at prices of \$2, \$3, or \$4, and probably in time they will be sold in the variety chain stores along with electric hot plates, curling irons, and toasters at \$1 or less. Certainly the profit margin now available ought to provide plenty of stimulus to some enterpriser who wishes to put electric razors into mass production so that they will no longer sell for around \$30 a pound, or say 20 times as much per pound as now suffices to buy so well-coordinated a mechanism as one of the lower-priced automobile radios. (The advantage is all on the side of the radio in respect to complexity and nicety of adjustment, and more important is the fact that it and its vacuum tubes include an enormous past investment in complicated research, design, and development.)

Shavers are rated on the basis of tests for shaving performance by members of CR's staff, and on a judgment of workmanship, but not on tests for endurance, on which question there has not yet been time to reach conclusions.

A. Recommended

Sunbeam Shavemaster, Model R (Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago) \$15. Gave a somewhat closer shave than other shavers tested. Not well suited for clipping long hair, or for use when the beard is long; on this account (depending on the user's own requirements) might warrant a *B* rating. Will, it is believed, be among the most satisfactory of electric shavers, on the normal one-day's growth of beard. Motor of a generally more satisfactory type than that used in other shavers; caused considerably less radio interference than other makes tested. The only shaver tested equipped with a self-starting motor and a convenient switch. Replacement heads, \$1 complete; cutting knife only, 15c.

B. Intermediate

Champion Cat. No. 8H6335 (Champion Instrument Co., Cranford, N. J.; sold by Sears, Roebuck & Co.) \$9.89 plus postage. Shaving performance about equal to that of *Schick Shaver*, except for slight chafing, which to many users would be rated perhaps as of no consequence. Pulling when beard was long, noticeably less than in most other makes. Well suited for clipping long hair. Practically the same razor is also sold, under the name *Saybrooke*, by R. H. Macy & Co., the well-known N.Y.C. department store, at \$9.34; and by some drugstores, under the name *Utility*, at \$12.50. 2

Hanley Clipshave (Clipshave Inc., Port Chester, N.Y.) \$10. A 1936 model examined shaved fairly well (probably as well as the *Shick*) but in use the motor slowed down several times, almost to a stopping point, during the course of a shave. A "Model H" purchased in March 1938 was found to exhibit the same defect, and in one case chafed the skin notably. If 1937 offer by manufacturer of thirty-day guarantee period, for razors purchased direct, providing for refund of purchase price in full if shaver was found unsatisfactory, still applies, this make, considering its lower price, might be worth a trial for some users. 2

Editors' Note: Two secondhand dealers in electric razors are: August Waeldin, Inc., 117 Fulton St., N.Y.C., and Electric Appliance Rental & Sales Co., 324 W. 42 St., N.Y.C., but their prices are more nearly half the price of the new razor. The first named also offers repair service, and an exchange or trade-in plan on razors submitted for appraisal.

B. Intermediate (contd.)

Nicholl Velvet (Nicholl, Inc., 766 E. 12 St., Los Angeles) \$17.50. Performance judged as practically indistinguishable from that of *Schick Shaver*. 3

Schick Shaver, (Schick Dry Shaver, Inc., Stamford, Conn.) \$15. Shaved somewhat less closely than *Sunbeam Shavemaster*, but more closely than makes rated C. Exceptionally free from chafing effect, but pulled rather severely when beard was long. Not as well suited for trimming long hair as *Champion*. Replacement cutter heads, \$5. 3

C. Not Recommended

Ray Electric Shaver (Ray, Inc., Hollywood) \$10. 2

Packard Lifetime Lektro-Shaver (Distrib. Progress Corp., 1 E. 43 St., N.Y.C.) \$15. Did not shave well; caused rather severe chafing. Replacement heads, \$5. 3

Remington Rand Close Shaver (General Shaver Corp., Bridgeport, Conn.) \$15, case 75c extra. Caused the most serious chafing of all shavers here reported on. Replacement head of different number sent by manufacturer, without extra cost, did not improve performance. Replacement cutter heads, \$2.50 3

BEWARE OF CHISELERS IN GRASS SEED

SEED INSPECTION LAWS have been enacted in a number of states for the protection of seed purchasers. They require that varieties of seed, and percentage of seeds which germinate and impurities be stated on the package. Thus the home gardener buying seeds in some localities is given protection which does not exist on most of the other things which he buys.

Unfortunately, the consumer, unaccustomed to such kind treatment from his government, does not avail himself of the protection. Hardly one in a hundred reads the analysis on the package. Because of this carelessness, grass seed is probably the most highly contaminated and adulterated product the home gardener buys. Moreover, many a consumer does not recognize good quality even when the seed is used on his own lawn and he can watch it grow!

In vegetables and flowers, results are usually determined within a month or two. The more common types are annuals, so that the first year will show whether or not they are up to standard. But this is not true of grass seed. The annual types, which are inferior grasses, and many of which are only fit for hay germinate quickly and vigorously, so that they actually seem to make a better showing than do the long-lived perennial types which sometimes take a month or more to germinate. An excellent case in point is timothy; as a hay grass it has few peers, but in lawns it should be considered a weed. Because it is cheap, and because it makes

vigorous green growth within a few days, it is the answer to the adulterators' prayers. The lawnmaker, seeing the vigor and strength of the early growth and the poor turf later in the season, will think that his poor handling, or a lack of water, spoiled the lawn. He does not realize that timothy cannot stand the usual close cutting, and that it dies out with the first freeze.

Always read the label before purchasing grass seed, and if the seed is *not* fully labeled do not buy it. If you buy in bulk (a poor practice except from a thoroughly reliable dealer known to have exceptionally high standards of business honesty), insist on seeing the bag or drum in which the shipment was received; it should bear the state inspection tag. If the mixture contains timothy in any form, shun it as you would any other gyp product. If it contains rye grass, it may be bought at a lower price, provided it contains in addition a reasonable percentage of permanent grasses. While most of the rye grass will die out the first winter, it does make a fairly satisfactory temporary lawn. When reinforced with other grasses, it is worth considering where cost is a factor. If the label shows that the mixture contains more than $\frac{3}{4}$ of one percent of weed seed, buy elsewhere.

Inert matter should not exceed 10 percent or 15 percent, depending on the species of seed. The exact amount is not important, since it is a question whether the manufacturing cost of extracting a

greater percentage of the hulls and chaff is worth while. Most amateurs sow too heavily anyway, and the hulls merely extend the mixture and compensate to a degree for this error. More than 10 or 15 percent inert matter, however, indicates dirty seed and the consumer may be paying too much for dirt and chaff. Chaff and hulls are often added by unscrupulous "open-bin" dealers to reduce their costs. As an example of what can happen where seed laws are not strictly enforced, a sample which was picked up by a shopper last spring showed 12 percent weed seed, 16 percent inert matter, 58 percent timothy, and a mere 14 percent bluegrass (as against 50 percent that would be normal).

One place where consumers can save money is in taking the seedman at his word when he recommends sowing about 3½ to 5 pounds per 1000 square feet. Sometimes the amateur will sow 2 pounds on 100 square feet. This is sheer waste. Thick sowing may give a temporary effect, but the plants will soon crowd each other so strongly that they will be injured. Sow moderately and save money.

Unfortunately, many gardeners sow at the wrong time. This, too, is to the advantage of the dealer in poor seed, since the vigorous annual varieties, which he mixes in too freely, are able to survive heat, and so make a better temporary showing. Over most of the area east of the Mississippi and north of the Ohio, it is a waste of time to sow good grass seed after May 1 to 15; it ought to be put in months before. In fact, the best results are obtained when sown at any time other than the conventional season. If a lawn has not been planted by May 15, it is better to sow a temporary lawn such as rye grass or a mixture of redtop and rye, which will make a fair showing despite the heat. Then a permanent grass can be sown on top of the temporary lawn about August 15 to September 20, which will make sturdy growth during the cool fall months. Grass can also be sown on top of the snow, or in spring when the seed can "mud in."

It is a waste of time to sow acid soil varieties of grass on alkaline soils, and vice versa. The following formula is excellent for the average Middle West alkaline soil (high in lime):

Kentucky bluegrass	50%
Redtop	35 to 40%
White clover	3 to 5%
(Balance will be chaff, hulls, etc.)	

While the first show of green will be from the redtop, this will die out after the second summer, and the clover and bluegrass will take possession. Redtop is an ideal "nurse grass," since it is fairly quick-growing and lives long enough to allow the permanent grasses to get a good start.

Where the bent varieties are wanted, the redtop can be reduced to 25 percent, (or even further in the Northeast), and 15 percent of bent grass substituted. From the standpoint of the amateur, however, the bents are badly overrated. They cannot be used unmixed without expert care. They must be pampered and fed like babies. The lawns must

be cut at least once a week, preferably twice. They must be watered daily. They are subject to brown patch and other diseases. Where an experienced lawn man (and that does not mean the average small-town handyman) is employed, their beauty might justify the extra care and expense they entail, but for the amateur, they are impractical. In mixtures, bents are useful to give fresh green growth at a season when bluegrass is dormant.

Bents are valuable on acid soils, but bluegrass will usually make a better lawn under such conditions, unless the special care which bents require can be given. The fescues are indifferent to soil reaction.

Sandy soils are a problem, since the one grass that does well on sand (Chewing's fescue), being of a dull bluish-green color and rather wiry in texture, is not pleasing to many lawn makers. However, there is no satisfactory substitute for it. A certain percentage of redtop and bluegrass may be sown with the fescue on sandy soil, and if moisture and plant food are available, will often take over the entire lawn.

Dense shade is a relative term, but that cast by a building or a Norway maple is too heavy to permit the growth of grass. It is a waste of time to try to establish a lawn in such locations, even though many so-called "dense-shade mixtures" are sold for this purpose. Here a trial of certain ground-cover plants, such as *Vinca minor* (running myrtle), *Pachysandra terminalis* (Japanese spurge), or some of the lower growing wild flowers are worth while. While they are not grass-like, they afford a show of green and are better than nothing. Also, a low-growing grass, *Poa annua*, which although it is a bluegrass maturing in one year, will often survive when every other grass dies. The seed, unfortunately, is extremely weedy and costly.

In the type of shade cast by oaks, elms, and other trees of more open growth than maples, the following mixture has been used with considerable success:

<i>Poa trivialis</i>	35%
Chewing's fescue	10%
Wood meadow	10%
Kentucky bluegrass	12%
Redtop	25%
(Balance hull, inert, etc.)	

Chewing's fescue is perhaps the most difficult grass seed of all to buy in good condition. Not only is it relatively expensive (the individual grains are large, so that a pound contains fewer seeds), but the germination declines rapidly after harvesting, unless exceptional care is used. The specialists always insist on special transportation-routing, as mishandling can destroy germination as much as 50 percent. Even the best seed cannot be had with a guaranteed germination of more than 80 percent. It is easily cleaned, however, because of the relatively large seed, so that a purity of 97 percent or better can generally be expected.

One of the most common methods of "chiseling"

occurs with mixtures sold from open barrels. Usual admonitions, however, to have nothing to do with ready-made mixtures are not based on common sense, since if a firm's mixtures are not to be relied upon, neither can much faith be put in its species grasses. It is just as easy to adulterate the latter as it is to cheapen a mixture. One of the worst-adulterated species of all is bent grass, since redtop, which belongs to the same family, can be mixed with it, *ad nauseum*, in a way which can only be detected by laboratory examination.

Good mixtures from reliable firms are better than badly blended homemade mixtures. If the home gardener wants to buy each species separately, he should not attempt to blend them, but should sow each by itself; otherwise the heavier seed will all be in one section of the lawn and the lighter in another.

Unfortunately, many states do not require the percentage of germination to be printed on the package. The only safe course in these states is to buy several weeks in advance of sowing, and send a half-ounce sample to the state seed testing

laboratory, usually located at the College of Agriculture. If the sample does not measure up to reasonable standards, the entire purchase should be returned to the dealer, and a refund demanded. Or the consumer, instead, may send his order to a seedman in a state which does have adequate seed inspection laws.

Seed tests by the amateur are not always satisfactory, as it is difficult to count out seed accurately and to obtain a blended average sample. Since grass seed is a daylight germinator, it must be exposed to sunlight during the germination test. This last will require from twenty to thirty days, during which time the seed must not be allowed to dry out. "Flats" of soil should be used rather than blotters, and this means that it will be difficult to maintain proper moisture conditions in the house. Since due advantage should be taken of the most favorable planting season, it is important that the home gardener, if he plans to make a test, shall begin it amply early on account of the long time required to complete it.

HORTUS

BATH SALTS

WHEN the tremendous amount of "ballyhoo" for bath salts in advertisements and over the radio is analyzed, there appear to be three reasons why consumers use such a product. Some salts have been widely sold as medicinal agents having a variety of therapeutic properties similar to those claimed for natural springs. One brand, seized by the U. S. Food and Drug Administration, consisted of 87 percent Epsom salt, 13 percent rock salt, with a small proportion of aromatic oil. It was claimed to "reduce weight two to four pounds in each bath," to be very beneficial for rheumatism and gout, and to be helpful as a general tonic. It was condemned on the basis of false and fraudulent therapeutic claims. Indeed, that even the cosmetic industry recognizes the impossibilities of such assertions, is indicated by the following statement from the leading journal of the trade, *Drug and Cosmetic Industry*: "Various salt combinations, simulating natural springs, are reputed to have medicinal effects, but these effects are sharply limited by the fact that *the salts do not penetrate the skin.*" [Italics ours—CR.] "Sharply limited," we may assume is the trade journal's way of saying that no one need be deceived by the claims.

The second reason for consumers' use of bath salts is for their service in carrying perfume. In many cases that is their only value, in spite of elaborate advertising claims to the contrary. "Here is the modern fountain of youth.... As you dress, you will feel a new vigor and energy, and you are equal to the most trying of social obligations." Does a person really believe such nonsense about 4711? Any such effects are entirely psychological, based upon the delicate

odor of the perfume and not to any therapeutic or actual effects of the bath salts. The *Bathasweet* advertising on the radio has gone to absurd limits in its utilization of these psychologic appeals. The lack of written record available to the listener of the radio program facilitates the advertiser's use of extreme and unrealistic claims.

Thirdly, and of practical value, bath salts are used to soften water. The "ring around the bath tub," is practically eliminated with the use of a proper water softener. Hard water contains chemical substances such as salts of calcium and magnesium which combine with soap to form an insoluble, sticky, non-cleansing compound. Because of its adhesiveness, this clings tenaciously to the side of the tub, leaves the hair dull and with a sticky coating, and the skin is not so clean and smooth as it would be if washed in soft water.

The substances used to "soften" water are salts which will produce compounds which though insoluble will create no unpleasant deposit on either the tub or the skin. Many such substances are available, although some are too alkaline and caustic to be used freely. Sal soda (or soda ash) is an excellent water softener, but is quite caustic and, unless carefully used, will cause irritation and roughness of the skin, sometimes mentioned in advertising as "dish-water hands." Trisodium phosphate, likewise, is a good water softener, but it is also slightly caustic. Sodium sesquicarbonate is probably among the best of the water softeners suitable for the bath, because of its mild alkalinity, although it is not entirely satisfactory if hardness of water is chiefly caused by magnesium salts, as it is in some regions. Borax is

a comparatively poor water softener, and an uneconomical one, and dissolves quite slowly. Silicates are excellent for magnesium salts, but are quite alkaline and hence irritating.

It is illuminating to read some of the articles in trade journals regarding bath salts. For example, Dr. L. S. Malowan writes in *Manufacturing Chemist*: "It is therefore highly advisable to precipitate the harmful mineral salts with the aid of a bath salt. Incidentally the perfume therein contained both stimulates and invigorates the skin.... Most of the preparations on the market—be they loose powder, tablets, or crystals—are based upon a sodium salt which exercises the useful property of dissolving fats which may have accumulated on different parts of the body." [Italics ours—CR.] This sounds more like advertising copy than a sober scientific discussion of facts that one has a right to expect in a journal for chemists. In the first place, the mineral salts are not harmful. Indeed, calcium and magnesium are desirable in foods and cannot possibly harm anyone who goes swimming or bathing in a weak dilution of them. The assertion that perfume can stimulate and invigorate the skin is based entirely upon the psychological effect and is not a subject lying within the field of knowledge of the professional chemist. An expert psychologist might have grave doubts on the nature and value of the skin reaction from a pleasant odor. The "useful property" of dissolving fats from the body is of highly dubious value, since a healthy skin requires a coating of naturally secreted fat-like substances. (It is well known that excessive bathing and excessive use of soap, and detergent substances generally, will do harm rather than good to the skin, by destroying some of its natural protection against irritation and the entrance of infection.) The same author further states that borax is desirable because of its attractive crystalline form and "excellent cosmetic value." Other writers have rejected borax because it did not possess "attractive crystalline form." The phrase "excellent cosmetic value," we believe, simply has no meaning that may be taken seriously by chemists—manufacturing or otherwise. One wonders what Dr. Malowan could have meant.

Of the samples of bath salts tested, six out of nine possessed water softening properties. *April Showers* consisted chiefly of common salt, which is not a water softener; indeed, it notably retards the lathering power of soap. *Yardley's* and *4711* contained chiefly sodium thiosulphate, the substance known as "hypo," used in photography, which is not a good water softener, although *4711* advertises that "the water becomes as soft and smooth as the dew of early morn." The relation between sodium thiosulphate and early morning dew will be a surprise to many photographers and photo-amateurs. According to *Drug and Cosmetic Industry*, "sodium thio-sulphate, as well as rock salt, is of little value in bath salts, since it has no water-softening powers and is used only where low cost and ease of manipulation are the only factors to be considered." [Italics ours—CR.] In view of this comment, it is enlightening to note that the three brands just mentioned

are very expensive—evidence enough that in cosmetics the consumer in his own interest had better never expect to find correlation between high price and high quality, or between high price and high cost of ingredients used in manufacture.

A few types of bath salts cause an effervescence. This is due to ingredients similar in nature to those found in baking powder, i.e., an acid and a carbonate, which, when water is added, cause the formation of carbon dioxide gas, the same gas as is present in soda water and in the raising of bread, which produces small bubbles. Effervescent bath salts have no particular therapeutic property, but some people think they do, or at least find the bubbles pleasant. Other types of bath salts contain a perborate which releases oxygen and upon this fact is based claims that the oxygen will "thoroughly cleanse your millions of pores of harmful acids which cause eruptions and body odors" and that it will "wondrously soothe your nerves and revitalize you." Needless to say, such claims are without scientific proof, and it would be hard to make any sort of convincing case for the laving of the body with a perborate solution.

Bath salts can be easily prepared in the home. Sodium sesquicarbonate readily lends itself to the making of a bath salt at home because of its attractive needle-like crystals and because it is readily soluble in water. The salt is spread on a piece of paper and sprayed with perfume by means of an atomizer until sufficient perfume has been applied to satisfy the person doing the blending. The sprayed salt is then allowed to stand exposed to the air. Only a small amount of perfume is required to be spread upon the salt; the latter is from time to time spread back and forth with a knife or spatula to give time for the alcohol or other solvent present in the perfume to evaporate, and is then ready for use. The cost of such salt is about 10 cents per pound plus a comparable amount to cover the cost of the perfume. One ounce of suitable perfume oil will be sufficient for 100 ounces (6¼ pounds) of bath salts and sells for 30 to 75 cents depending upon the odor. (Any who wish to purchase small quantities of special colored perfume oils by mail may communicate with the Buffalo Chemical Supply Co., Box 240, Buffalo, N.Y.)

All ratings are cr 38.

A. Recommended

Sodium Sesquicarbonate. (Purchasable from a large wholesale drugstore, or dealers in laundry materials and cleaning supplies for industrial use; or from Buffalo Chemical Supply Co., Box 240, Buffalo, N.Y. at 2½ lb for 25c plus postage.) 1

Wrisley's Perfumed Bath Crystals and Water Softener (Allen B. Wrisley Co., Chicago and N.Y.C.) 10c in chain drugstores. Price per lb, 13.9c. Contained essentially sodium sesquicarbonate with perfume and coloring. 1

St. Denis Bath Crystals. (Parfumerie St. Denis, 452 Fifth Ave., N.Y.C.) 27c. Price per lb, 41.5c. Contained essentially sodium sesquicarbonate with perfume and coloring. 2

A. Recommended (contd.)

Boyer Bath Crystals and Water Softener (Boyer, the Soc. Parfumeur, 15 Rue Royale, Paris, made by the American Division, Chicago) 50c. Price per lb, 95c. Contained essentially sodium sesquicarbonate with perfume and coloring; the latter incompletely soluble in water. 3

Sels pour le Bain Coty Bath Salts. (Coty, Inc., 423 W. 55 St., N.Y.C.) \$1. Price per lb, \$1.25. Contained essentially sodium sesquicarbonate with perfume and coloring. 3

B. Intermediate

Olde Lavender Water Softener and Bath Crystals (Sold by F. W. Woolworth Co.) 10c. Price per lb, 13.2c. Contained essentially sodium sesquicarbonate and sodium chloride (common salt, which appears to be an undesirable ingredient as it interferes with the lathering of soap) with perfume. 1

Bathasweet (The C. S. Welsh Co., N.Y.C.) 45c. Price per lb, 81c. A mixture containing a phosphate of sodium, sodium chloride (common salt), and a carbonate. Advertised to dissolve the impurities of the water; actually precipitated them. Some months ago, the company signed a stipulation with the Federal Trade Commission agreeing to "discontinue representing that Bathasweet, a chemical compound for softening water, contains the

B. Intermediate (contd.)

secret of beautiful body skin, and that through the use of this preparation in the bath water, skin imperfections will disappear." *Bathasweet's* radio advertising rises to heights, only rarely excelled even in that field, of imaginativeness and implausibility; its price is correspondingly high. 3

C. Not Recommended

April Showers Bath Salts (Cheramy, Paris and N.Y.C.) 85c. Price per lb, 95c. Contained essentially sodium chloride (common salt) with perfume and coloring. 3

Genuine Eau de Cologne Bath Salt No. 4711 (Ferd. Mulhens, Inc., 25 W. 45 St., N.Y.C.) 60c. Price per lb, \$1.44. Contained essentially sodium thiosulphate (note fuller comment on *Yardley's* in next listing) with perfume and coloring. 3

Yardley's Old English Lavender Bath Salts, No. 1620 (Yardley & Co., Ltd., 33 Old Bond St., London) \$1.25. Price per lb, \$1.70. Contained essentially sodium thiosulphate with perfume and coloring (an especially cheap soluble salt, but note that of the proprietary salts tested, this is the highest priced per pound, does not have good water-softening properties, and is not considered desirable for use as a bath salt). 3

MAYONNAISE

MAYONNAISE is one of those doubtful blessings brought to the busy housewife by mass production of food which may save her time, but also may not be so good for her family's stomachs as its homemade precursor. Making up a good batch of mayonnaise is no small feat. Indeed, in the early days of the popularity of this type of salad dressing, there was much earnest conferring between housewives as to ways and means of mixing it smoothly so that it did not curdle. Originally it was made by adding olive oil to the yolk of an egg until the desired consistency was achieved. The mixture was then seasoned with lemon juice or vinegar, and salt and pepper were added to taste.

Webster's dictionary as late as 1931 defined "mayonnaise" as made with olive oil, but during the World War all kinds of oil and fat substitutes came into vogue and displaced olive oil as an ingredient. Since both corn oil and cottonseed oil were much cheaper in price than olive oil (because of its high import duty), and since Americans have never become sufficiently accustomed to good olive oil to miss its fine and distinctive flavor, it was natural that both of these substitute oils should be used exclusively when mayonnaise began to be manufactured on a large scale. Besides the price differentiation, they kept better and had a blander flavor so that the finished product would be uniform—and unvarying uniformity of flavor, appearance, and physical characteristics are always more

important to the mass-production food manufacturer than quality. The absence of flavor from the substitute oils now used in making mayonnaise was covered up by the use of somewhat more than the normal amount of spice until finally the public became completely accustomed to the change, and now only the old-fashioned cook, perhaps, would know that olive oil was once the principal and prized ingredient of mayonnaise.

Because corn oil and cottonseed oil are both domestic products, whereas olive oil is almost exclusively imported, it was only a natural following of governmental precedents that led the Department of Agriculture to write the standard for mayonnaise in terms of American-grown products. By their definition, mayonnaise or mayonnaise dressing or mayonnaise salad dressing is "the semi-solid emulsion of edible vegetable oil, egg yolk, or whole egg, a vinegar, and/or lemon juice, with one or more of the following: salt, other seasoning commonly used in its preparation, sugar, and/or dextrose. The finished product contains not less than 50 percent of edible vegetable oil."

Some very interesting sidelights on the habits and practices of the mayonnaise trade, which has grown to an industry involving many millions of dollars, will be found in the report of the Hearings on the Code for the Mayonnaise Industry held by the Agricultural Adjustment Administration of the Department of Agriculture, October 20, 1933. It ap-

peared that control of some sort was urgently needed to save the industry from the competition of manufacturers of salad dressing. Salad dressing, due solely to the carelessness of consumers in not reading labels, and particularly in not noticing the essential distinctions between terms which sound somewhat alike, competed directly with mayonnaise. Since salad dressing is a far less expensive product to manufacture, its production had grown in volume to a point where its sales almost equalled those of mayonnaise. The manufacturers of mayonnaise were required to make their product conform to the government standard already quoted but there was no standard of any kind for "salad dressing," which could be cheapened by an excess of water, starches, or other fillers. Indeed, some chemical ingenuity was applied in order to increase the amount of these cheap filler-substances that could be introduced without too noticeably spoiling the appearance and texture of the product. Salad dressing, in a word, could be almost anything that the consumer would accept under that name. Both products are of the semi-perishable class, but mayonnaise is slightly more perishable than salad dressing, according to the testimony during the code hearings, and therefore needed more careful handling. What the manufacturers wanted from the code that was to be established for their industry was the setting of a standard for salad dressing sufficiently high to bring the price to the consumer up nearer that charged for mayonnaise, the power to set prices for the various products, and the standardization of the sizes of containers in which the different products were to be sold.

The standard for mayonnaise formerly in effect called for an egg and oil content of not less than 78 percent. This, some members of the industry managed to get reduced to 70 percent and reworded to permit easier compliance. As the executive vice president of the Mayonnaise Institute ingeniously put it at the Code Hearing, "we have, in your [Department of Agriculture's] new standard for mayonnaise, simply *raised* the combined standard to eight percent *lower* than it was in the old law, but to a point which is indicated below which mayonnaise cannot be made and be a true mayonnaise, in accordance with our information." [Italics ours—CR.] In other words the standard for mayonnaise, never, of course, too high under the Department of Agriculture's food standards policies, was lowered. Certainly it is far lower than a well-made mayonnaise prepared at home. It is well, perhaps, to remind our readers of the anti-consumer policies of the NRA and its trade association leadership frequently discussed in *CR Bulletins* at that time, by a specific instance which occurred in connection with mayonnaise. The industry stoutly put forward its view that the sale of mayonnaise in bulk and in large containers should be prohibited under the code—because such methods of sale made for lower retail prices for the product. The industry's greatest advantage, of course, came in the selling of many small, and quite expensive, glass jars as containers for the customary small quantities of

their product, because the use of jars in its sale tended to excuse the ridiculously high prices charged for the product itself, extremely cheap to manufacture and distribute on a mass production basis.

In a test on nine brands of mayonnaise made for CR by a laboratory particularly well equipped to do food analysis, all were found to comply easily with the government definition (which technically is of such a primitive sort that it hardly deserves the name "standard"). Indeed, the fact that a particular mayonnaise has been found to comply with the government standard is of very little value to the consumer. It is chiefly a protection to the manufacturer of mayonnaise in that it prevents the manufacturer of salad dressing from selling a more cheaply produced product at mayonnaise prices. Nothing whatever is said about the freshness of the particular mayonnaise or the freshness and quality of its ingredients, which may be anything from best to worst, and may be assumed never to be comparable with the quality of ingredients used in the home for making a corresponding product. Chemical analyses, too, are of little value in determining the really important elements of quality of mayonnaise which are too subtle for determination by the chemist, just as the qualities of roast beef and of first-class homemade ice cream elude laboratory measurement. In all the brands tested, except *Premier*, the oil indicated was either cottonseed or a seed oil mixed with corn oil. *Premier* was apparently made with corn oil alone. Tests for adulteration with starches or gums were negative in all cases and all the products showed a satisfactory percentage of edible vegetable oil. Indeed, so similar were the analyses, that after the first reading of the report, it seemed as though (with the exception of a sample of *Blue Plate*, which was found to have been made of rancid material or to have developed rancidity) it could be said: "These are typical mayonnaise dressings with little to choose between."

But a more careful study of the report revealed the matter of choice *could* be a relatively precise procedure, provided the consumer were given a few grains of useful information on the mayonnaise label. The significant thing about the report was the relation between the taste preferences of the particular group of judges participating in this test and the acidity percentages of the dressings tested. This group of judges rated those dressings "A" which had "plain" or "balanced" taste (10 to 12 percent acidity); "B," the bland-tasting dressings (about 6 percent acidity); and "C," the strongly acid dressing (21.8 percent acidity). Instead of the usual A, B, and C ratings, we give here a table showing the findings of the analyst together with the judges' preferences. The prices range from 27 to 33 cents when purchased in pint-sized jars and from 38 to 40 cents per pint in the half-pint sizes, indicating a distinct advantage in the larger-sized jars when suited to one's needs. Individual prices are not given because they seemed in several cases to represent regional differences.

The lowest prices in the pint-sized jars were found in a southern chain store and a California self-service store; the highest, in a northern A & P store where three national brands were purchased. All listings are cr 38.

or *Emulsol*, a specially treated proprietary egg yolk which allows a 12% decrease in egg yolk to be used with a corresponding increase in the content of oil, which is much cheaper than eggs. With complete information on the label as to the amount and type of

Brand	Odor	Consistency	Taste	Percent solids (approx.)	Percent fat (oil + egg fat)	Percent acidity referred to vinegar of 4% acidity	Test for cotton-seed oil	Test for seed oil	Test for corn oil
<i>Vogeler's</i> (Vogeler Bros., Newark, N.J.)	Fresh Slightly mustard	Medium	Balanced A	81.8	74.6	11.9	Positive		Indicated
<i>Kraft</i> (Kraft-Phenix Cheese Corp., N.Y.C.)	Fresh	Fairly heavy	Balanced A	84.3	78.5	10.0	Negative	Positive	Indicated
<i>Red & White</i> (Distrib. Red & White Corp., Chicago)	Fresh	Fairly heavy	Plain Slightly acid A	83.8	78.0	10.1	Positive		Indicated
<i>Country Club</i> (The Kroger Grocery & Baking Co., Cincinnati)	Fresh	Medium	Balanced A	80.9	73.6	10.7	Positive		Indicated
<i>Durkee's</i> (Durkee Famous Foods, Berkeley, Calif.)	Slightly oily	Fairly heavy	Rather flat B	86.2	83.1	6.2	Positive		Indicated
<i>Best Foods</i> (The Best Foods, Inc., N.Y.C.)	Fresh	Fairly heavy	Slightly oily B	84.2	81.1	6.5	Positive		Indicated
<i>Hellman's</i> (The Best Foods, Inc., N.Y.C.)	Fresh	Fairly heavy	Slightly oily B	84.8	81.1	6.0	Positive		Indicated
<i>Premier</i> (Distrib. Francis H. Leggett & Co., N.Y.C.)	Fresh	Light	Acid C	75.8	69.0 (low)	21.8	Negative		Indicated

The following product, on account of the condition in which a sample of it was found at the time of test, must be rated C. *Not Recommended*:

Blue Plate (Blue Plate Foods, Inc., New Orleans, La.) Odor and taste oily; found to have been made of rancid material or to have developed rancidity. Separation of emulsion was evident.

Consumers are accustomed to buying food which does not carry a declaration of contents on the label, though when a farmer buys fertilizer or chicken or stock feed, an elaborate and very complete statement of the contents, and even of their quality, is a regular part of the label in many states (because food and drug laws were set up, as we have often noted, to protect producers rather than consumers, and the intermediate consumer of the farm rather than the ultimate consumer, whether of city or country). In the case of mayonnaise, it is particularly important to have a true statement as to the ingredients used in preparation and the amount of acidity, printed where the buyer can easily see it, as well as a statement as to the kind of egg product used (fresh eggs, frozen eggs, or *Emulsol*), to provide some clue as to the quality and flavor-character of the product. A statement as to the *type* of egg used would be expecting too much, we fear, since a mayonnaise made with fresh eggs would unquestionably be preferred to one containing either frozen eggs

eggs used, and the amount and full name and description of any foreign substances used by the manufacturer to facilitate production and increase stability or delay development of rancidity, the consumer would at least know whether she was paying fresh-egg prices for a "processed-egg" product.

A careful examination of the labels of the brands tested, reveals not a word as to how much of any ingredient is used, and with the exception of *Durkee's*, no hint of the quality of the egg content is given. Instead, we find that *Kraft* is "Kitchen Fresh"; *Best Foods* is "Real Mayonnaise, containing nothing but finest salad oil, eggs, vinegar and spices" (does the "finest" refer to all these ingredients, and is the manufacturer prepared to offer evidence of this claim, or is it just the usual adman's determination never to leave out an adjective when one can be used?); *Vogeler's* is "Made of Real Eggs" (aside from candy, just what is an imitation egg—or does this distinguish *Vogeler's* eggs from *Emulsol* and, anyway, isn't *Emulsol* made

from real eggs?); *Premier* is "made only from pure and wholesome materials, containing edible oil, vinegar, egg, salt and spice" (note the absence of any claim that these are the *only* materials used); *Durkee's* "Certified Purity" is sworn to by an analytical chemist, complying with the recent ruling of the Federal Trade Commission that certification meant little unless accompanied by the name of the certifier. This label also states that it is made of "strictly fresh eggs," the only statement of quality which appeared to be unequivocal; yet, as egg graders well know, there is no such thing as a strictly fresh egg, and that term has been applied to a startlingly wide variety of actual grades of eggs.

As the oils commonly used in mayonnaise making (corn, cottonseed, and peanut) all contain only traces of vitamin A and practically no other vitamins, and since only a small amount of egg is used (often of questionable quality and freshness), the food value of mayonnaise in the quantities used is practically zero. For this reason, the expensive tests for percentage and type of egg products used were felt to be of more theoretical than practical significance. Besides, in the absence of labeling which commits the manufacturer to definite responsibility for the type and quality of ingredients used, there is no reason why on the day after genuine fresh eggs were found to be used in his product, he should not shift to a cheaper, low-quality set of ingredients. It is well known that lacking responsible labeling, the mayonnaise industry gives itself the widest latitude in shifting the quality and type of its ingredients from time to time as a means of controlling profit margins, and especially of dealing

with market-price changes in those ingredients. Nevertheless, we hope the results presented here will be of some assistance in helping our subscribers choose the most suitable and economical brand for their individual tables, and above all to express themselves to mayonnaise manufacturers to the end of bringing about that some one or some few manufacturers will separate themselves from the trade in general and adopt responsible quality and ingredient labeling of the kind which has been outlined in this article. Short of that, there is no hope for improvement or even general good quality in the product because it is not one in respect to which either federal or state governments have in the past seriously concerned themselves, nor are they likely to in the future, short of a public demand for a clear, specific, responsible quality statement of the kind suggested.

Allergy to cottonseed oil is not uncommon. An unpleasant reaction to cottonseed oil in any family would necessitate making mayonnaise at home, using olive oil, preferably, or corn or peanut oils instead of cottonseed. For those homemakers who have the time and inclination, this is probably the most satisfactory method in any case. For even though no money may be saved, the ingredients will be of known quality and the flavor may be varied to suit the particular family's wishes. A homemade product will probably spoil more easily than the factory-made product, but it is well to remember that all good foods are subject to spoilage. It is only in foods where the chemist has been up to something, or has invented some special techniques of manufacture, that rancidity is delayed or held off indefinitely.

WRITING INKS

THOUGH the making of ink is one of the oldest of the chemical arts and though many have done research in the field, there has been little technical advance made in ink manufacture—one might almost say for centuries. Ink manufacturers, well satisfied with a trade which permits them to turn very inexpensive ingredients at a very low compounding cost into high-priced, profitable products, sold in small units, have not thought it worth the money to employ chemists to find out how to make better inks. They are in a peculiarly advantageous situation in this respect, since a bottle of ink lasts for so long a time that few are inclined to question whether a two-ounce bottle might be sold with a sufficient profit at 2 cents instead of 10 or 15 cents.

Nearly fifty years ago the desirable characteristics of ink were carefully set down in a book by Schluttig and Neumann, two German ink chemists. Ink, they said, should be a solution which is clear except for its color, i.e., free from floating or sus-

pended particles, and should keep well for a considerable time without forming a deposit or scum. It should flow easily from the pen without clogging or dropping, it should not spread on paper, not penetrate through good paper, should have an intense color that does not fade or bleach out, have no strong odor, not be too acid, not be sticky after drying, should resist effectively efforts to make it illegible by treatment with water or alcohol [to which CR would add, soap and water and other simple common reagents] after it has dried for eight days, should contain not less than a certain minimum amount of iron, and contain sufficient tannin to give deep black after eight days. Schluttig and Neumann might have added that the ideal ink would write jet black at the time when first applied to the paper and would resist drying out in a fountain pen in such a way as to clog the pen and keep it from feeding freely. The first of these two requirements was not set down in early writing about ink because no one

had been able to contrive an ink formula which would give instant blackness and at the same time suitable permanence comparable with that of the ink which turned black slowly after being applied to the paper. The second desideratum is a modern development coming from the very wide use of the fountain pen. In steel pen days, the property of an ink which makes it clog a fountain pen was practically of slight importance.

The iron and tannin contents, specified in Schluttig and Neumann's description of a good ink, make a compound which penetrates into the paper and which there becomes oxidized into a dark-colored substance comparatively durable and resistant to the effects of atmospheric conditions and time. The penetration into the paper of a dark-colored substance, moreover, renders removal by chemical means very difficult without betraying the attempt at alteration. Even after hundreds of years, and though the ink marks may have so far faded as to become invisible to the eye, chemists can restore the writing of such an ink. Even though the paper may have burned to a char, the iron-tannin marks remain and can be made visible by appropriate chemical means.

How to make a writing ink which is satisfactory in all respects is a problem which has not yet been solved, for the requirements of an ideal ink are many, and up to the present time have been found to be to some extent mutually antagonistic. For instance, if the common iron gallotannate ink is to keep satisfactorily in a bottle, it must be slightly acid, but the acidity required to produce this desirable quality has the unfortunate effect of deteriorating the paper, bringing about its destruction along the ink lines after many years. It is also corrosive to steel pens, a factor which is of far less importance nowadays, with fountain pens having gold and stainless steel nibs tending to displace the ordinary steel pens used in past years. If, on the one hand, an ink is selected because it is least harmful to paper, or because it flows freely from the pen, or perhaps writes black the instant it is applied to the paper, then it will very likely be found to be an ink which is easily eradicated by chemical or physical means.

Except when an ink is to be used by children, there is little reason for it to be other than of a permanent type. Any ink you use may need to be a record ink twenty years from now, and may need to resist erasure—mechanical or chemical—within a few days after the record is made. The great floods in Pittsburgh and in other cities obliterated the valuable records of many a business concern. Many a letter or notation has been lost because a postman or the recipient permitted it to become wet in the rain or dropped it into a puddle of water. No one can tell when water leaking into his cellar, or applied by a fireman, may wipe out the value of important papers if the ink on them is of the worthless dye type now so common in the stationery and ten-cent stores. Such inks, mere water solutions of a colored dye, are attractive because of their bright colors or because of the intense black with which

they write immediately upon being applied to the paper, but since they are water solutions, they can be washed off all too easily, and they do not penetrate the paper and produce an insoluble compound within its fibers.

A college president recently warned that the inferior grades of paper and inks in use in contemporary documents may even cause the history of this period to be completed blotted out and the present age to become known to future historians as the "lost century." It is an interesting fact that up to about the time of the Civil War even the newsprint paper in this country was of a sufficient grade to have a long life. Now even books which should last a century or two are written on a paper inferior to what newspapers used to appear on many years ago. Perhaps the advertising man with his insistence upon endless acres of paper to carry his cigaret, chewing gum, and tooth-paste advertisements has been as responsible as anyone for the degradation of the quality of the paper which carries our reading matter.

Recently, commissions of postmasters in Massachusetts were found to have been signed by the Postmaster General with ink which quickly faded out when exposed to light. The Postmaster General, who has not only politicians, but the extensive technical resources of the Federal Government at his beck and call, should have known better. Only a blank was left where the signature of the incomparable Jim Farley should have appeared. President Wilson used to think that an "indelible" pencil was fine for signatures, but like Postmaster General Farley's ink, it was really the opposite of indelible.

Dye inks which contain no iron, as for instance *Quink Washable Black*, are unsuitable for writing checks or other documents intended to serve as a record. There are likewise many inks which contain only a little iron—not enough to make them appreciably better than mere dye inks. Because of their attractive qualities in other respects, such as especial fluidity or strong color, they have become very popular among people who suppose that all inks are pretty much alike or do not care whether their writing lasts or does not last. The unfortunate thing about this position is that every once in a while in everybody's lifetime there comes a time when the need to decipher a faded signature or to establish beyond question a date or number becomes a very pressing one, with perhaps very important financial significance.

The nearest approach to a black, permanent, erasure-resisting ink with which there has been long experience is Government Standard Record Ink. To meet Federal Specifications, record ink must contain not less than 0.58 gram nor more than 0.70 gram of iron per 100 cc. Government Standard Writing Ink has one-half as much iron as the record ink. It has the advantage over the record ink of being more fluid and hence working better in fountain pens. Its permanence should serve the purpose of anyone having no more than ordinary need for high record value of what he writes. So-called "safety" or "acid proof" inks (often bright

blue or greenish-blue in color) are resistant enough to acid erasure but are quickly removed by other reagents, such as alkali or soap and water. Such inks have been often sold to bankers on the strength of their acid-proofness, by salesmen who forgot to indicate their peculiar want of soap- or alkali-proofness, in respect to which they are among the worst inks that could possibly be devised.

Government standard inks continue to be the best inks from many different standpoints, and granting certain well-known defects of the government grades of inks, there are no commercial inks which surpass them in a number of really *important* characteristics. Government standard writing ink and government standard record ink are iron-gallotannate inks. Inks which the Federal Government buys must not be inferior in essentials to these standard inks. (This requirement came about because it was found that important state documents were being written by people who did not know anything about the requirements for a permanent ink, in a quality of ink which would call for the document to be copied over at great expense every two or three generations.) Government writing ink, which is a blue-black ink, contains the following (see *Inks—Circular C413*, by C. E. Waters. National Bureau of Standards. 54 pages. 10c from Superintendent of Documents, Washington, D.C.):

	Grams
Tannic acid.....	11.7
Gallic acid crystals.....	3.8
Ferrous sulphate crystals.....	15.0
Hydrochloric acid, "dilute," U.S.P. .	12.5
Carbolic acid (phenol).....	1.0
Dye (C.I. 707; Sch. 539).....	3.5
Water to make a volume of 1 liter (1000 cc)	

To make record ink instead of writing ink, the proportions of the first four ingredients, which are the ones fundamental to the final strength of color and permanence of the writing, are doubled.

In some states, the law permits the sale of only a 10 percent solution of carbolic acid; in such a case 10 cc of the 10 percent solution may be substituted for the 1 gram called for in the formula. The dilute U.S.P. hydrochloric acid is a 10 percent solution of HCl (which is not, of course, the same as a 10 percent solution of *concentrated* hydrochloric acid). The soluble blue dye that is used is specified by its color index number or alternatively by its Schultz number and should be obtained directly from a reliable dye dealer, as for instance, Fezandie & Sperrle, Inc., 205 Fulton St., N.Y.C.; or from the Buffalo Chemical Supply Co., Box 240, Buffalo, N. Y.; or from E. A. Snow, 253 Bedford St., Lexington, Mass. Specifying in ordering that the dye is to be used in making gallotannate ink. Be sure you get the dye you ask for and that it is correctly and completely labeled by its name and number as such (soluble blue, C.I. 707, or Sch. [or Schultz] 539). The types of dye that will serve properly in ink are few; with many, the ink reacts in such a way as to produce an off-color or a heavy

sediment that will clog any fountain pen. The other ingredients may be ordered from the Buffalo Chemical Supply Co., or may be measured out by the neighborhood druggist, who, however, will quite likely have to order specially one or more of the ingredients.

It is recommended that distilled water should be used in making ink unless you live in a region where the water is exceptionally pure and soft and free from dissolved matter. In making, dissolve the tannic and gallic acids in about 600 cc of warm water (122°F). Then add the hydrochloric acid and the ferrous sulphate. In another dish, dissolve the dye in about 250 cc of warm water. Pour this through a filter paper into the first solution. Rinse the vessel in which the dye was dissolved two or three times with a little water (a few cc) and pour this also through the filter paper. When the mixture has cooled to room temperature, add the carbolic acid (which is a poison and must necessarily be handled with care, properly labeled with a poison label, and always put away in such a place that it cannot come into the hands of a child or anyone not familiar with its dangers). Then add enough distilled water to make a total volume of 1 liter, which is about 1 1/20 quarts, and mix thoroughly not by shaking but by simply inverting the mixture in a stoppered flask a dozen times or so. Instead of filtering, the ink may be allowed to stand for several days in the corked flask; then all but the lower part of the liquid is carefully poured off. This ink writes blue and the writing turns black upon exposure to air after a period of several days. Many people prefer the appearance of an ink which writes jet black. Attempts to use a black dye in iron-gallotannate ink, such as government writing ink, have so far proved unsatisfactory. The best commercial black ink for general writing purposes which CR has tested so far, is *Higgins' Eternal*, but see comment on color value in the listings. This ink is a suspension of carbon and lacks some of the desirable qualities of government standard inks as noted subsequently, but it does have the advantage, important to many, of writing immediately with a fairly intense color not requiring one to wait for a week or more to develop blackness.

For convenience in storing and shipping, ink powders which can be mixed with water to make writing ink are desirable. Most commercial ink powders, however, are mere water-soluble dyes, and most attempts to make good gallotannate ink powder have failed. Recently the National Bureau of Standards has recommended a ferrous sulphate ink powder made of the following ingredients:

	Grams
Gallic acid crystals.....	10.0
Ferrous sulphate crystals.....	15.0
Tartaric acid.....	1.0
Soluble blue (C.I. 707; Sch. 539)...	3.5

These four ingredients may be mixed dry and then added to distilled water to make a total volume of 1 liter. The ink has good keeping qualities, low acidity, and a good degree of permanence but is not, however, to be regarded as a fully developed

type. It is perhaps worth experimenting with and further experience with it may indicate how it can be improved. No completely satisfactory way has yet been found for making powdered inks of good color and intensity. CR has experimented with a number of other dyes in place of the soluble blue and has found water-soluble nigrosine (C.I. 865; Sch. 700) or Durol black B (C.I. 307; Sch. 265) to give a nearly jet-black ink which has proved satisfactory for use with steel pens. The first of these dyes gives writing which has something of an off-shade, being a dark greenish-black similar to the color that black overcoats used to turn to after long use, years ago. The second of these dyes gives a bluish-black writing. The writing of each becomes jet-black in time. The Buffalo Chemical Supply Co., Box 240, Buffalo, N.Y., can supply ink powder made according to this formula with either soluble blue, soluble nigrosine, or Durol black B dye. The powder is made into ink by simply adding distilled water and mixing, as already described for government ink. CR is continuing to experiment to find an ink which not only is a permanent iron ink and writes black but is also satisfactory for use in fountain pens; and will advise subscribers when a more satisfactory ink is found.

Inks should be kept in a tightly closed container to exclude them as much as possible from contact with air. Do not mix inks, even though presumably of the same make or composition, especially if they are to be used in fountain pens. Even minute traces of one ink in another may spoil it for satisfactory use in a fountain pen. If necessary to change inks in a fountain pen, it is very important that the pen should be thoroughly washed and soaked in water, or in water with a little added ammonia, for two or three days and thoroughly rinsed. The three government inks described here, the record and the writing standard inks and the ferrous sulphate ink, may be used with complete satisfaction in fountain pens; the first two have been so used for years by persons in government bureaus and by those connected with Consumers' Research, but this can only be done if the pen is thoroughly cleaned to begin with and if it is not too often or too long left open on the desk with the cap removed.

For permanence and maximum resistance to physical and chemical erasure, avoid all red, green, and violet inks, and blue inks *except* those that really turn to an intense black; use instead government record ink (high strength standard) or government writing ink. Use a pen that gives a liberal flow of ink (any good fountain pen can be adjusted by competent workmen to give such a flow) and for maximum resistance to erasure or alteration, use a sharp or somewhat scratchy pen or write with an ordinary but stiff pen, using heavy pressure. All of these in combination with ink of the good types described will cause an irreparable physical modification of the surface fibers of the paper and will make erasure or alteration extremely difficult. If these directions in the use of inks are followed in writing checks, and the correct banking form and safety paper are used, being careful to fill in each line so that extra words

or letters cannot be added, there is little chance for significant alteration going undetected. Proper use of ink and pen will be at least as valuable in protecting checks from alteration as the use of the commercial check protecting devices, and far more convenient and more easily applied.

TESTING INKS

The testing of inks to determine whether they have the properties of a good ink is, fortunately, interesting and easy. Except for a chemical test to determine iron content quantitatively, tests made on ink are usually comparative, to determine the relative performance as compared with that of the government standard ink.

Insoluble Matter. To determine if the ink is sufficiently free from suspended or cloudy matter, it may be allowed to stand for 24 hours in a bottle of small thickness or diameter such that a strong light can be seen through the layer of ink. Then the bottle should be held up against the light and tilted to see if any sediment has formed. There should be no more sediment than in a bottle of government standard ink, which is very little.

Aging Tests. To determine if the ink will keep satisfactorily in the bottle or in an inkstand, 25 cc of the sample ink, and 25 cc of the standard, should be allowed to stand in loosely covered glass containers in ordinary daylight (not sunlight). The sample under test should be as free from mold and scum as the standard ink.

Marking and Permanence Tests. Writing ability and quality of permanence are tested by making marks with a sample and with a standard ink on bond paper, such as ordinary "typewriter bond." The paper is pinned to a board, or clamped to a pane of glass, and held at an inclination of about 45 degrees. The streaks are made by allowing measured portions of ink, about 0.6 cc (1/12 teaspoonful) to flow down over a sheet of paper. The ink may be conveniently applied to the paper by using a glass tube of about 3.5 mm (1/8 in.) bore having a scratch (made with a file or sharp knife) 60 mm (2 3/8 in.) from the end of the tube and fitted at the other end with the rubber bulb of a medicine dropper. The ink may thus be drawn up into the tube and then, holding the tube vertically, allowed to flow out all at once at the upper edge of the paper. The exact volume of ink is not so important as it is to use the same volume each time and to use a tube of the proper bore. After the ink has dried, the paper should be examined on both sides. The streaks of the sample ink should show as dark and clear-cut lines at their edges as does the standard ink, and the ink should not strike through the paper. After keeping the paper for a week, the streaks of the sample ink should be as black as those of the standard ink. Government standard ink and probably also the other one being tested will have become a considerably darker shade during that time.

Permanence. To determine comparative permanence, the paper may be cut into narrow strips, at right angles to the streaks. One strip may be ex-

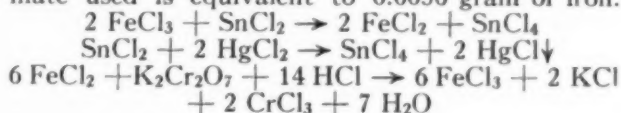
posed to direct sunlight for a period of about 96 hours; other strips may be soaked for 24 hours in water, in 50 percent alcohol, in 2 percent sodium hydroxide (lye) [Caution: caustic. In making such a solution, the lye must be handled with care.], in soap solution (0.5 percent of a good toilet soap, such as *Ivory* or *Lux*), in 2 percent hydrochloric acid [Caution: caustic. Prepared by diluting 4.7 cc of concentrated hydrochloric acid to 100 cc.], in a dilute solution of chlorine (made by diluting 3.75 cc of sodium hypochlorite U.S.P. to 1000 cc with distilled water), etc., and the intensity of the sample ink compared with the intensity of the standard. One quick and rather useful measure of resistance to chemical alteration is to use a fresh sample of ordinary, two-fluid ink eradicator on both the standard ink and the ink under test, the eradicator being applied to writing made with both inks under identically the same conditions as to type of pen, pressure, freedom of flow from the pen, time in which ink was allowed to dry, etc.

Corrosion Test. To determine the corrosiveness, which is dependent upon the acid content of the ink, steel pens (ordinary old-fashioned steel, not the new stainless kind) may be allowed to stand for 48 hours in the sample ink, and in the standard. Before the pens are immersed in the ink, however, as well as afterwards, they should be cleaned in alcohol and then in ether [Caution: inflammable.], and dried in an oven at about 105°C. After cleaning, they should be handled only with forceps. Loss of weight of the pens may be determined by weighing them to the nearest milligram before, and after, immersing in ink. If a crust has formed on the pens, they may be heated by holding them with forceps a few inches above a gas flame, being careful not to heat to redness. The blackened crust may then be removed with water. Pens immersed in the sample ink should lose no more weight than those immersed in the standard.

Iron Content. Testing for iron content requires technical skill and chemical apparatus. The test should be run in duplicate or triplicate. Measure, with a pipette, 10 cc of the ink and put it in an evaporating dish. Place on a hot-water bath and evaporate practically to dryness. Then heat carefully over a flame until completely dry. Increase the intensity of the heat and continue to heat until completely ashed (about half an hour). Allow to cool and add 15 cc of concentrated hydrochloric (muriatic) acid (HCl) [Caution: caustic.]. Use "chemically pure" acid, as ordinary commercial acid contains iron which interferes with the accuracy of the test. If the ash does not completely dissolve, place on a hot-water bath. [Caution is needed, of course, in handling ink-ash acid mixture.] Then add, drop by drop, sufficient stannous chloride (SnCl₂) test solution to change the color from yellow to colorless, and add two drops in excess. This reduces the iron from the ferric to the ferrous state. Pour into an Erlenmeyer flask or beaker and dilute to about 250 cc with distilled water. Then add about 3 cc of mercuric chloride (HgCl₂) [This is a very poisonous substance. Handle with great care.]

test solution. This oxidizes the excess stannous chloride.

Add a few drops of a 1 percent solution of diphenylamine ((C₆H₅)₂NH) in concentrated sulphuric acid (H₂SO₄) [Caution: strong acid.] and titrate with N/10 potassium dichromate (K₂Cr₂O₇) until a green color appears. Each cc of N/10 potassium dichromate used is equivalent to 0.0056 gram of iron.



Stannous Chloride Test Solution: Dissolve 1.5 grams of SnCl₂ in 10 cc of distilled water containing a drop of hydrochloric acid.

Mercuric Chloride Test Solution: Dissolve 6.5 grams of HgCl₂ [Caution: extremely poisonous.] in sufficient water to make 100 cc.

Potassium Dichromate N/10: Dissolve 4.9 grams of reagent K₂Cr₂O₇, previously powdered and dried at 120°C, in sufficient distilled water to make 1000 cc.

* * *

The following ratings of inks are based primarily upon durability of the writing as determined by standard tests for resistance to various chemical and physical treatments and upon corrosion and iron content as compared with government standard writing ink. All inks contained iron with the exceptions of those mentioned in the listings as not containing it. With the exception of *Higgins' Eternal*, not even one of the commercial inks tested was the equal of government standard writing ink in resisting chemical erasure. *Higgins' ink*, however, was not as resistant to mechanical erasure. It lies rather on the surface of the paper than deep in its tissue as do the best iron inks. It should be observed that the term "permanent" used by many manufacturers to designate their inks is a highly sanguine description. Some of the inks so designated failed badly to measure up to this term. Inks rated *B* were somewhat inferior to government standard writing ink and those rated *C* were found to be markedly inferior to this ink. (The washable inks, being in a different class, were not compared with the government standard writing ink.) Inks marked with an asterisk (*) were markedly acid, a characteristic which is detrimental to steel pens and, over a period of many years, to paper, but not judged to be of great significance to the average fountain pen user. Price ratings are on the basis of relative prices per fluid ounce. All ratings are cr 37.

A. Recommended

Government Standard Record Ink. Made according to the directions given in the preceding pages. Record ink is twice the strength of the Government Standard Writing Ink with respect to the four basic ingredients. This ink is strongly recommended to all who wish their writing or signatures to be as strong in color and as permanent in keeping quality as possible. AA1

A. Recommended (contd.)

Government Standard Writing Ink. Made according to the directions given in the preceding pages. "Writing ink" is less permanent and gives a less intensity of final color than does the record ink, but will give less difficulty with clogging when used in fountain pens, especially for a person who does not take particular care to keep a fountain pen sealed as much as possible. **A1**

B. Intermediate

The following inks rated *B* were relatively permanent unless otherwise noted.

Ferrous Sulphate Ink Powder. Made according to the directions published by the National Bureau of Standards, in foregoing text. **1**

*Carter's Permanent Kongo Midnight Black, No. 886 (Carter's Ink Co., Boston) 10c per 2.5-oz bottle. **2**

*Carter's Permanent Ryto Midnight Blue-Black, No. 816 (Carter's Ink Co.) 10c per 2-oz bottle. **2**

*Graph Permanent Blue-Black, No. S 730 (United Drug Co., Boston) 15c per 3-oz bottle. **2**

Higgins' Eternal Black, No. 812 (Charles M. Higgins & Co., Inc., 271 Ninth St., Brooklyn, N.Y.) 10c per 2-oz bottle. Resisted chemical erasure and exposure to light best of inks tested, including government standard writing ink, and was the only commercial ink even closely to equal the government standard ink in this respect; but was not as resistant to mechanical erasure as the types of ink which penetrate and react chemically with the paper rather than lie upon its surface. Wrote an intense black with, however, a somewhat grayish-brown shade, when it flows thin, as it may from a fountain pen. A lasting ink, suitable for many uses, but not the most suitable ink available for uses where maximum protection is required against possible fraudulent erasure or alteration. Not an iron ink. **2**

*Sanford's Permanent Blue-Black, No. 5 (Sanford Mfg. Co., Chicago) 10c per 2-oz bottle. **2**

Stafford's Permanent Blue-Black, No. 250 (S. S. Stafford, Inc., N.Y.C.) 10c per 2.5-oz bottle. Iron content somewhat too low. **2**

*Higgins Blue-Black, No. 822 (Charles M. Higgins & Co., Inc.) 15c per 2-oz bottle. Iron content somewhat too low. **3**

Waterman's Ideal Permanent Jet-Black (L. E. Waterman Co.) 15c per 2-oz bottle. Iron content somewhat too low. **3**

* * *

Winner Washable Black, No. 989 (Winner Chemical Co.) 5c per 1.3-oz bottle. Not an iron ink. For use where an ink which is washable from fingers and fabrics is wanted. Not suitable for records. **1**

Quink Washable Black (The Parker Pen Co., Janesville, Wis.) 15c per 2-oz bottle. Not an iron ink. For use where an ink which is washable from fingers and fabrics is wanted. Not suitable for records. **3**

C. Not Recommended

The following inks had excessive sediment, were low in iron, or resisted chemical alteration poorly. Some had more than one of these faults.

Ephraim Concentrated Blue-Black (Jerome W. Ephraim, Inc., N.Y.C.) 40c plus postage per 4-oz bottle. May be diluted to 1 qt for writing ink. When diluted according to directions to make either writing ink or record ink, was found notably inferior to government standard inks, although claimed to be practically equivalent. **1**

Lyncrest Blue-Black (Sold by W. T. Grant Co. stores) 10c per 4-oz bottle. **1**

Onward Blue-Black, No. 86-R-2500 (Sold by 5- and 10-cent chain stores) 5c per 1.5-oz bottle. **1**

*Winner Permanent Blue-Black, No. 919 (Winner Chemical Co., Boston) 5c per 1.3-oz bottle. **1**

Ammonium Ammoniumoxyferrigallate Ink. A new non-acid ink strongly recommended by National Bureau of Standards, and made according to its directions. Low in corrosiveness but inferior to government standard writing ink particularly to light fading and erasure by acid and alkali. Judged to be unsatisfactory for use in fountain pens. Had an immediate strong black color, also characterized by a grayish-brown quality of blackness as mentioned in connection with another type of ink. **2**

*Sanford's Premium Blue-Black, No. 0 (Sanford Mfg. Co.) 10c per 2-oz bottle. Sediment, considerable. **2**

Signet Blue-Black, No. 835 (Russia Cement Co., Gloucester, Mass.) 10c per 2.3-oz bottle. **2**

Stafford's Permanent Black, No. 252 (S. S. Stafford, Inc.) 10c per 2.5-oz bottle. Not an iron ink. The term "permanent" not justified by results of the test. **2**

Waterman's Ideal Blue-Black, No. 172 (L. E. Waterman Co., Newark, N.J.) 10c per 2-oz bottle. **2**

Quink Permanent Blue-Black (The Parker Pen Co.) 15c per 2-oz bottle. **3**

*Sanford's Permanent Jet-Black, No. 146 (Sanford Mfg. Co.) 15c per 2.3-oz bottle. The term "permanent" not justified by results of the test. **3**

Scrip Permanent Blue-Black, No. 22 (W. A. Sheaffer Pen Co., Fort Madison, Iowa) 15c per 2-oz bottle. The term "permanent" not justified by results of the test. **3**

Scrip Permanent Jet-Black, No. 32 (W. A. Sheaffer Pen Co.) 15c per 2-oz bottle. The term "permanent" not justified by results of the test. **3**

Stafford's Nubian Intense Black (S. S. Stafford, Inc.) 15c per 2-oz bottle. Not an iron ink. **3**

Corrections and Emendations to: Consumers' Research Bulletin issue of February 1938

Page 10 Automobiles: Pontiac 6, 26 DA. Respecting this car, the statement "Tires not overloaded" is incorrect. This should have read: "Tires overloaded." The rating of this car, however, remains unchanged.

Hudson Terraplane 6, 82. The statement "Tires overloaded" is incorrect. The tires are not overloaded. Rating of car remains unchanged.

PHOTOGRAPHIC EXPOSURE METERS

PHOTOGRAPHIC SCIENCE has now developed so far that it seems proper to say that a good, reliable exposure meter should be included in the equipment of every serious amateur photographer. Of course, for those who constantly use one particular brand of film of the same speed, the use of an exposure meter is not nearly so important as for those who use a variety of emulsions of different speeds. Many can learn to estimate exposures without the aid of the meter, if the same negative material is used continually, and if the conditions of exposure as to locality, the nature of the objects or scenes photographed, etc., does not change too radically from one picture to the next. It is safe to say, however, that the use of a good exposure meter is called for if much of one's photographic work is to be done under abnormal lighting conditions, and lighting conditions where enormous variation exists between light intensities under different circumstances and at different times of the day, as in the case of much interior photography and the photography of commercial articles, appliances, etc. When lighting conditions are well reproduced, as, for example, when the lighting is entirely artificial, the use of the exposure meter becomes much less necessary.

For miniature camera work, correct exposure is particularly important. It may be argued that if certain types of films, such as supersensitive panchromatic, are used, an exposure of many times normal will not have any adverse effect. Nevertheless, this argument will not hold if the negatives are to be used for enlargement. While satisfactory contact prints can be made from dense negatives without great difficulty, enlargements made from overexposed negatives will show a loss of sharpness of image, or definition. There is a distinct advantage in having negatives on a strip of film correctly exposed, i.e., of uniform density, for in enlarging, much time, effort, and material can be saved by not having to determine the correct exposure for each negative being enlarged.

Exposure meters are of three general types: photoelectric, visual, and actinometric. The last type, which measures the intensity of light falling on the object to be photographed by means of the discoloration of sensitized paper, represented the deluxe type of exposure meter a decade or two ago, but these are now, for good reason, more or less obsolete. They will not, therefore, be discussed in this article.

In the photoelectric type, which is the advanced type of meter now commonly used, the average brightness of the light reflected from the object or scene to be photographed is measured by the electric current produced in a self-generating photocell. The best of these meters may be amply accurate for their purpose, but all have the disadvantage of being delicate and require careful handling and an occasional recheck by their maker to see that the accuracy is not seriously changed. Such periodic recalibration will be required even if they are handled with care and discrimination to avoid shock and jar and overillumination of the sensitive surface.

In the visual optical-wedge type meter, which is the second important type of meter now in common use, the light reflected from the object to be photographed passes through a glass or other strip of graduated translucency so as to illuminate at different intensities a series of numbers or letters. This screen of continuously varying translucency is called an optical wedge because its effect is that which would be produced by a piece of relatively opaque glass whose thickness varied from very thin at one end to very thick at the other. In using this type of exposure meter, the reading taken is that of the darkest (least legible) number or letter which can be distinguished from its background. The brighter the illumination coming from the object to be photographed, the more are the numbers which can be seen against the background of the optical wedge. With dark objects, only one or two of the numbers can be discriminated. With bright objects, more or all of them can be seen. Unlike the meter using the photocell, this last type of meter depends upon the sensitivity of the eye which, in turn, varies considerably with the individual, and notably with the intensity of the light to which the eye has previously been exposed, fatigue, even the condition of the observer's health, etc. If, however, the corrections furnished with the meter are intelligently applied and a series of tests made at the outset to calibrate the eye of the user, this type of meter will prove very satisfactory and convenient.

It is important to stress the absurdity of calculating accurate exposures with the meter and then applying these exposures to a shutter of unknown accuracy. All too many people are so overawed by the use of an instrument that they immediately make unwarranted assumptions about the precision of every observation and finding connected with the use of that instrument and often they forget that any given physical phenomenon depends upon many factors, some of which can be determined precisely and some of which can only be very crudely measured or judged. The case of the exposure meter and the average camera shutter is an interesting instance, for camera shutters are notoriously unreliable in their speeds and even in their relative speeds from one setting to the next. Apertures or iris diaphragm openings also, even in the finest cameras, are known to be inaccurate often by as much as one full stop above or below their rated values. Extreme care, therefore, in determination of the required exposure is rendered absurd in the event that one does not know how closely the shutter settings are reflected in the actual and relative times of opening of the shutter, or lens apertures.

In a test of brand new cameras, large variation was found between the performance of the various shutters. In one case, when the shutter was set for 1/200 of a second, the actual exposure was 1/400 of a second. In another test of a miniature camera, shutter speed settings of 1/100 and 1/200 of a second

were found to give identical exposures. Naturally in such cases as these, meticulous attention to the use and indications of the exposure meter is so much wasted time and energy. Apparatus for testing shutter speeds can be constructed cheaply with a minimum of apparatus, and if there is a sufficient demand for information on this subject, CR will be glad to prepare and print directions for making and operating one or two such devices of simple construction and use. It would seem that every high school and college should have available a simple shutter testing equipment, because of its interest to the students and also the fact that a good deal can be learned of physical and engineering principles in making and calibrating it.

Even if the shutter speeds, lens apertures, and the exposure meter were all accurate as instruments, and correct technique in development were followed there would still remain an element of personal judgment, in the correct and intelligent operation of the meter itself. For example, in using the meter for obtaining the exposure for a landscape in which a large part of the sky is included, the customary method of pointing the meter at the object to be photographed will give an exposure more suitable for the sky than for the landscape. The preferable method would be to point the meter at the landscape, as by this means the landscape will be correctly exposed and the sky overexposed, when the picture is taken. The latter can be to a degree compensated for in printing or enlarging.

The following ratings include most of the well-known meters, with the exception of the new *General Electric* which has recently appeared on the market and which as yet CR has not tested, believing that such tests should await a somewhat longer period of use of this instrument (as it often happens that defects or faults of design may turn up after a time in any new instrument or appliance). All ratings are cr 38.

PHOTOELECTRIC TYPE

A. Recommended

Mini Photoscop (Sold by most photographic dealers) \$14.75 with case. An excellent and reliable meter for the price and, in CR's opinion, the best of those listed, outside of the *Weston*. Construction is simple, and the meter as a whole is more rugged than the *Weston*. Its readings corresponded closely with those of a calibrated *Weston*. Claimed to be suitable for both still and motion pictures. **2**

Weston, Model 617-2 (Weston Electrical Instrument Corp., Newark, N.J.) This model has been superseded by Model 650. It is listed because many are still available and probably will be in retail stores for a long time. It is commonly sold at a greatly reduced price, around \$12.50, its nominal price having been \$27.75 including case. For general outdoor scenes, and not too subdued lighting, this meter is equivalent to the later Model 650, but was found to be inaccurate for poorly lighted subjects for which it is necessary to press a button, thereby magnifying the pointer motion, altering the scale range, from 0 to 1000 units to 0 to 100.

A. Recommended (contd.)

Weston, Model 650 (Weston Electrical Instrument Corp.) \$22.50; case \$1.50 extra. Electrical design of the microammeter gives exceptionally even division over entire scale. Very accurate, but delicate. Requires careful handling and guarding against undue jars. If negatives from exposures obtained with this or any other meter of its type seem to indicate that the meter has become inaccurate, it should be returned to the manufacturer for recalibration. A model for use with motion pictures is also available, at the same price. **3**

B. Intermediate

Rhamstine Electrophot, Model MSB (J. Thomas Rhamstine, 301 Beaubien, Detroit) \$17.50; case \$2 extra. Claimed to be suitable for both still and motion pictures. **3**

VISUAL OPTICAL-WEDGE TYPE

A. Recommended

Introscope (Distrib. Photo Utilities, Inc., 10 W. 33 St., N.Y.C., and sold by most photographic stores) \$2.60; case 50c extra. Found accurate, and considered one of the best and simplest to handle of the meters investigated. Covers a wide range of film speeds. Simple to use; like *Weston*, includes a calculating scale. Considered an excellent buy. A model for use with motion pictures is also available at the same price. **1**

Bewi (Sold by most photographic stores) Junior Model, \$7; Senior Model, \$11. Both sold complete with case. Similar in construction to the *Introscope*. Senior Model has a larger range of stops than the Junior. Claimed to be suitable for both still and motion pictures. **3**

B. Intermediate

Leudi (Mimosa American Corp., 485 Fifth Ave., N.Y.C.) \$2.15 complete with case. Consists of a simple optical wedge enveloped by a continuous strip calculating scale. The instrument in use is held at arm's length. Suitable for outdoor use, but not deemed sufficiently accurate for use in artificial light. The *Leudi* is not considered comparable in value to the *Introscope*, the latter being well worth the additional cost. Ciné type model also available at same price. **1**

ENLARGING ACCESSORY FOR USE WITH YOUR OWN CAMERA

IN THE January 1938 *Bulletin*, in the article on "Plate and Film-Pack Cameras," it was stated: "When attached to a simply constructed attachment, this type of camera can be used as an efficient enlarger or projection lantern." In response to the many requests received for information as to where such a device could be purchased, CR is pleased to recommend the following adapter. There are, of course, others on the market which CR has not examined or tested, but hopes to do so at a later date.

A. Recommended

Zeiss Mirax Accessory (Carl Zeiss, Inc., 485 Fifth Ave., N.Y.C.) \$16 complete with 75-watt bulb. Can be used with most cameras from vest pocket to 8 x 12-in. size having a detachable back. Suitable to make enlargements up to 16 x 20 in., vertically or horizontally. Strong and well made.

SIGNS AND PORTENTS

"It's NEW! It's sensational! Now you can make your own face cream. Only takes about ten minutes."

With these headlines, the "midwinter flyer" catalog recently issued by Montgomery-Ward to the millions on its mailing list offers a kit for the making of face cream at home. Consisting of ingredients recommended by the company, the kit is offered for 89 cents....

Whether women will go to the trouble of making their own cosmetics remains to be seen. Even if a number of them bought the home kit as a result of this advertisement, it is not a certainty that they would renew their purchases once the first supply has been consumed. After the novelty of home manufacturing has worn off, they will find that it is a lot more trouble and, in the end, more expensive to make their own goods than they had been led to believe. ("Use Double Boiler," an editorial in *Drug Trade News*, January 17, 1938.)

The cosmetic trade obviously does not approve of the mail-order firm's encouraging women to make their own cosmetics. Home manufacture of such an item tends to take all the glamour and mystery out of the business and makes it harder for advertising men to be persuasive in their tall talk about rare and precious ingredients and the great scientific skill needed to produce their particular gift to womanhood. The cream offered by Montgomery Ward, we may say, is one of the mineral-oil type commonly sold for cleansing. For a cold cream providing adequate lubrication of dry, rough skin, the lanolin type is preferable.

The Agricultural Appropriation Act for the fiscal year ending June 30, 1938, however, contained the following proviso:

Provided further, That no part of the funds appropriated by this act shall be used for laboratory investigations to determine the possibly harmful effects on human beings of spray insecticides on fruits and vegetables.

Under the mandatory terms of this proviso the 2-year research program on the toxicology of arsenic and lead, which it had been planned to continue for a period of 2 or 3 years longer in order to obtain the scientific data essential for a satisfactory solution of the problem, was terminated abruptly on June 30, 1937, and all experimental animals were destroyed. (Report of the Chief of the Food & Drug Administration, 1937.)

Here is another of a long list of violations of consumers' rights by the Federal Government. The failure to provide funds for carrying on studies on the toxicology of arsenic and lead, in effect, wasted all previous funds spent on the project, which is one of utmost importance to all consumers of apples, pears, cabbage, cauliflower, broccoli, and other fresh fruits and vegetables. The order absolutely to terminate the study of the facts already accumulated, and to destroy the experimental animals, is the exact laboratory equivalent of the destruction of libertarian books by a fascist dictator. In this case, the expunging of the record was done as effectively by the destruction of the flesh and bones of the test animals, as though the researchers' record had been transferred to the typewritten or printed page and every copy of the report burned in one of the book-burning pyres

which have been so popular when a totalitarian dictator came into power. The government's failure in what is obviously a paramount and pressing public duty, puts the problem of research on the toxicity of contaminating substances in our food and drug supply squarely up to private research organizations and the universities. Let them take up the job that the New Deal abandoned without objection or protest!

EXECUTIVES of the French progenitor of Pinaud, Inc., have been analyzing the American market and, contrary to much American opinion, are beginning to believe that the time is ripe to introduce a line of "ultra-precious" perfumes and toiletries which will retail from \$15 to \$25. Jacques Heilbronn, Pinaud president and director, looks forward to an upturn succeeding the recession in April or May. ("New Business," in *Business Week*, December 4, 1937.)

Somehow we feel that this cosmetic concern has been badly advised. The fact that there are no rare or precious ingredients in cosmetics has gotten around pretty generally. American consumers have become rather well enlightened on the low cost and high price of cosmetic materials and in these times are unlikely to fall on the expected grand scale for Mr. Heilbronn's super-super toiletries.

OMAR is not called an all-purpose flour for nothing. You can use it for baking, of course, but according to Omar users, it is also a practical face powder, it makes superlative wall-paper paste, and now, says one of John Franz's butcher customers, it's the best thing he ever found for making bologna.

Franz reports: "When we say Omar is different and has more absorption, we are not feeding them a lot of bologna. A butcher here in Waterloo tried Omar in his bologna. With 119 pounds of meat, 24½ pounds of Omar, and water, he got 200 pounds of bologna. And that is a lot of bologna."

"He said Omar worked perfectly, while other flours he had tried did not absorb nearly so much water and were sticky. He also said that Omar absorbed more water than bone meal, which cost him 8c per pound, and, further, the Omar bologna stood up perfectly." ("No Matter How Thin You Slice It," in *The Ech-O-Mar*.)

The January 1935 issue of CR's *Bulletin* carried an article entitled "What Goes Into Sausage Besides Pork." The author pointed out that the consumer frequently paid for cereal and water at pork prices. Loud protests came from the packing industry that such things just couldn't happen. The packing industry's publicity men spent pages of the most immaculate typewriting to explain that such things just aren't true, and that people who make such charges against the meat manufacturing industry are guilty of the grossest misrepresentation and do a wrong to an innocent industry. And now two years later, a flour company furnishes additional documentation to that already available to CR on the problems of "padding," or fluffing, of sausage products.

IF YOU WANT TO HELP YOUR FRIENDS SAVE MONEY TELL THEM ABOUT

Consumers' Research Bulletin

Only
\$3
A Year

No matter what their occupation may be—housewife, doctor, lawyer, merchant, butcher, baker—all must buy food, clothing, and other merchandise. In order to buy wisely, they need the advice to be found in CR's Bulletins.

Here is what subscribers have written about how much the service means to them:

"You may be interested to know that I have more than saved the subscription price this last year in connection with the single item of tooth brushes." (S. L. B., Syracuse, N.Y.)

"Any grown person, male or female, that makes purchases with his or her own money, must be a fool if, knowing the contents of your publications, he or she finds them not worth the subscription price; for every one has to buy some of the things you treat of, and surely does not have the information you give, or enough of it to prevent mistakes in

buying to the extent of more than \$3 a year. I feel that it would be much to my own, and other subscribers', interest to see your subscription list much larger; for the main reason that in such case dealers and manufacturers would take more notice of it to improve their offerings and moderate their claims...." (Subscriber of Rosharon, Texas.)

"I estimate that I have saved at least \$200.00 by following the recommendations in your bulletins in the two years that I have been a subscriber." (J. Stuart White, Taunton, Mass.)

This April issue is not confidential. Show it to your friends so that they may see for themselves just how much information about commodities and services appears in a single number of *Consumers' Research Bulletin*. Then tell them about the *Annual Cumulative Bulletin* which contains over 200 pages of just such information on many more subjects. A copy of the 1937 *Annual Cumulative Bulletin* is sent free of charge to all new subscribers.

For New Subscribers

Consumers' Research, Inc., Washington, N.J.

☐ I enclose \$3 (Canada \$3; foreign \$3.50) for one year's subscription to the Consumers' Research Bulletin (which includes Annual Cumulative Bulletin number and monthly Bulletin numbers—except during July and August).

It is understood that my handling of any CR material which is marked "The analyses of commodities, products, or merchandise appearing in this issue are for the sole information of subscribers," will be in accordance with that direction.

Name
(Please write in longhand)

Street

City State

My profession or business is

CR-4-38

For New Subscribers

Consumers' Research, Inc., Washington, N.J.

☐ I enclose \$3 (Canada \$3; foreign \$3.50) for one year's subscription to the Consumers' Research Bulletin (which includes Annual Cumulative Bulletin number and monthly Bulletin numbers—except during July and August).

It is understood that my handling of any CR material which is marked "The analyses of commodities, products, or merchandise appearing in this issue are for the sole information of subscribers," will be in accordance with that direction.

Name
(Please write in longhand)

Street

City State

My profession or business is

CR-4-38

PREVIOUSLY ISSUED

Special Bulletin 26—A Consumers' Study of Automobile Gasolines and Lubricating Oils. August 1937. Contains a full discussion (without listings by brand) of the properties of both gasolines and oils, and the latest information on the changing of crankcase oil, with points of great importance to every automobile user, permitting large economies in use of oil. 16 pp. 25c

Consumers' Test Manual. This pamphlet comprises a number of simple and readily applied tests of common household articles and supplies, suitable for use of students of chemistry, physics, general science, and household arts. The Chemical Section, which is now ready, contains simple and concise directions for making a number of tests, such as: Tests for Quantity of Water in Butter; Sulphites in Fruit, Fruit Juices, etc.; Starch in Face Powder; Lead in Paint; Ash in Coal; Quality of Eggs; and Analyses of Soap. 38 pp. (including index) 50c

General Bulletins

Since the *General Bulletin* is not confidential, single issues are available to anyone at 30c a copy.

OCTOBER 1937

"Golf Balls"—a report on 12 makes.

"What's in the Can?"—in which some 22 brands of canned vegetables and 12 brands of fruits are rated A, B, or C, on the basis of tests made by government experts.

"Flashlights"—25 different models rated.

"Radio Today"—With Some Notes on What It Might Be Tomorrow, by Gareth Smith.

"Electric Ironing Machines"—a report of CR's test of 4 machines of the rotary type and 2 of the pressure type.

JANUARY 1938

"Shaving Soaps"—a discussion of effective shaving techniques and ratings of 13 soaps and 19 creams.

"What is Irium?" by Russell C. Erb. If you have wondered just what this "thrilling dental discovery" in *Pepsodent* was, read this article.

"Elixir Poisonings," by George W. Fiero. The weakness in our present Food and Drug law which was responsible for the death of many people who took "Elixir of Sulfanilamide" is succinctly pointed out in this article.

"Gasoline"—a report of tests of over 50 gasolines, chiefly from the West and Far West.

"Plate and Film-Pack Cameras"—a report on 12 cameras of this type.

"Men's Suits"—a report of CR's test on 11 makes including *Crawford*, *Howard*, *Society Brand*, *Stein Bloch*, *Hart Schaffner & Marx*.

"Card Tables"—CR's test of 12 tables.

Monthly Bulletins

The following *Bulletins* are available, at 30c a single copy, only to subscribers to CR's full service.

NOVEMBER 1937

"Toilet Soaps"—a report of the latest CR test of 32 brands.

"Radio Sets - 1938 Models"—preliminary ratings of 13 new models.

"Amateur Motion Picture Equipment"—including ratings of 8 mm cameras, 16 mm cameras, 8 mm motion picture projectors, 16 mm motion picture projectors, 16 mm sound projectors, and accessories.

"Leather Brief Cases"—discussion and ratings of 4 types, 8 makes.

"Men's Rubbers and Women's Rubber Galoshes"—ratings of 9 brands of men's rubbers, and 8 brands of women's galoshes.

DECEMBER 1937

"Men's Soft Felt Hats"—a discussion of "ash-can" hats, mercury poisoning from hats, and the results of CR's test of 12 well-known brands.

"Garters for Men Who Wear Them"—a report of tests of 13 pairs.

"Playing Cards"—a report on tests of 12 brands.

"Cameras"—a discussion of cameras in general, ratings of 7 high-grade roll-film cameras.

"Pocket Cigaret Lighters"—12 makes tested and reported on.

"Baseball Bats and Balls"—a report of CR's test of 8 bats and 8 balls.

FEBRUARY 1938

"Automobiles of 1938"—a report on all well-known makes in price groups ranging from \$439 to \$5135.

"Miniature Cameras"—a discussion of the various drawbacks in the use of this type by the amateur, with ratings of 21 cameras.

• "High-Fidelity Radio at Low Cost"—specifications and diagrams that will enable any radio handyman or competent serviceman to build accessories to an old-style tuned-radio-frequency receiver that will provide realistic and faithful reproduction.

"Radio Sets - 1938 Models"—final results of CR's test of 18 models.

MARCH 1938

"Soap Substitutes - *Dreft* and *Drene*"—a discussion of the properties of these products.

"Used Cars"—advice on how to go about buying a used car, what to look for, with a list of defects in certain models of cars.

"Reflex Cameras"—ratings of 8 single-lens reflex cameras and 6 twin-lens reflex cameras.

"Automobile Tires"—CR's test of 13 brands.

"Linoleum"—a discussion of what to look for in buying this type of floor covering, the different types, and ratings of 6 inlaid linoleums and 14 felt-base floorings, or printed linoleums.

"Hair Preparations"—ratings of 8 "tonics" and 6 hair dressings.





ESPECIALLY FOR STUDENTS AND STUDY GROUPS

I

Consumers' Research Annual Cumulative Bulletin

Confidential \$1 per student

In order to make available on an economical basis a considerable part of CR's confidential material at a price within reach of student incomes, a special subscription consisting of the *Annual Cumulative Bulletin*, the *Introduction to Consumers' Research*, and several reprints such as "Testimonials C.O.D.," "Scot Tissue," "Gyp Row," sent in one mailing, is available to students for classroom use, at \$1 per student when each member of the class subscribes.

Teachers who are interested in using this material in class should write for the special student application blanks. Each student who will use the material must sign the special blank agreeing to keep the information confidential, before any material is issued to him. Further, every student in the class must sign the agreement before it is permissible for the instructor to discuss any of the test data and information given in confidential *Bulletins*.

II

Consumers' Research General Bulletin

Quarterly \$1.00

Consumers' Research General Bulletin, unlike most CR *Bulletins*, is not confidential. It is issued four times a year, in October, January, April, and June. It presents results of tests on various products, listing them by brand name in the same fashion as the *Annual Cumulative Bulletin*. Since it is not confidential, school libraries may subscribe and the *General Bulletin* may be freely used as reference material where an entire class does not wish to avail itself of Offer I. Subscription rate for the volume year October through June is \$1. Subscriptions are entered for this period only.

CONSUMERS' RESEARCH, INC.
BOX N
WASHINGTON, N. J.

III

Consumers' Digest with Teachers Manual and Study Outline

Consumers' Digest is a monthly magazine which presents in popular, readable fashion information of especial interest to consumers. The Teachers' Manual and Study Outline, issued to accompany each number of the *Digest*, groups its material in such a way as to permit its easy use under a variety of classroom conditions. *Consumers' Digest* lists commodities by brand name but presents only the *Recommended* listings. New articles especially written for this magazine appear each month, including directions for making a consumer's test of some commodity.

Subscriptions are \$3 a year; single copies, 25c. Special rates are made for classroom or study groups as follows:

No. of Copies	Rate
10 to 24	20c each
25 to 100	15c each

Plus one free copy for the instructor and one copy of the Teachers' Manual and Study Outline.

Sample copies of *Consumers' Digest* and the Teachers' Manual and Study Outline will be sent on request to teachers contemplating using it in class.

IV

Consumers' Digest

6 Months for \$1

SPECIAL INTRODUCTORY OFFER

This special short term subscription is to accommodate the instructor who may be teaching consumer subjects for only one semester. For those who request it, the monthly Teachers' Manual and Study Outline will be included free of charge. Please refer to Offer IV in sending in your remittance.

CONSUMERS' DIGEST
BOX L
WASHINGTON, N. J.